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SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Ngoc-Yen Nguyen Examiner #: 69546 Date: June 17, 2003
Art Unit: 1754 Phone Number 308-2536 Serial Number: 09/940,438
Mail Box and Bldg/Room Location: CP3 - 9A15 Results Format Preferred (circle): PAPER DISK E-MAIL

If mor than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Doped precipitated silica

Inventors (please provide full names): Juergen Schubert, Klaus-Dieter Hellwig, Astrid Muller

Earliest Priority Filing Date: ______

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

Please search for:

- Al-doped precipitated SiO_2 having a BET surface area of more than 300 m^2/g, Al is distributed uniformly in the silica
- Process for making the ~~Al~~-doped precipitated silica (Please see claim 10).

****

STAFF USE ONLY		Type of Search		Vendors and cost where applicable	
Searcher:	EJ	NA Sequence (#)		STN	$186.28
Searcher Phone #:		AA Sequence (#)		Dialog	
Searcher Location:		Structure (#)	✓ (1)	Questel/Orbit	
Date Searcher Picked Up:		Bibliographic	✓ (and)	Dr.Link	
Date Completed:	6-18-03	Litigation		Lexis/Nexis	
Searcher Prep & Review Time:	10	Fulltext		Sequence Systems	
~~Clerical Prep Time:~~		Patent Family		WWW/Internet	
Online Time:	125	Other		Other (specify)	

PTO-1590 (8-01)

WHAT IS CLAIMED AS NEW AND IS INTENDED TO BE SECURED BY LETTERS PATENT IS:

1. An aluminum-doped precipitated silica having a BET surface area of more than 300 m^2/g, wherein aluminum is distributed uniformly in the silica.

2. The aluminum-doped precipitated silica of Claim 1, wherein the BET surface area is 350 to 800 m^2/g.

3. The aluminum-doped precipitated silica of Claim 1, wherein the aluminum is in the form of Al_2O_3.

4. The aluminum-doped precipitated silica of Claim 1, having an Al_2O_3 content of from 0.05 to 0.5% by weight.

5. The aluminum-doped precipitated silica of Claim 1, having an Al_2O_3 content of from 0.05 to 0.25% by weight.

6. The aluminum-doped precipitated silica of Claim 1, wherein the silica is in the form of particles having an average size of less than 15 μm.

7. The aluminum-doped precipitated silica of Claim 1, wherein the silica is in the form of particles having an average size of 5 to 12 μm.

8. The aluminum-doped precipitated silica of Claim 1, having a DBP absorption of from 200 to 500 g/100 g.

9. The aluminum-doped precipitated silica of Claim 1, having a DBP absorption of from 250 to 350 g/100 g.

10. A process for preparing aluminum-doped precipitated silica, comprising:

a) heating a mixture of water and sodium silicate at a temperature of from 70 to 86°C and adding sulfuric acid until half of the sodium silicate is neutralized; next

b) aging the mixture for a time of from 30 to 120 minutes; next

c) adjusting the pH of the mixture with sulfuric acid to a range of from 3.0 to 7.0, thereby precipitating the aluminum-doped silica; next

d) filtering the aluminum-doped silica from the mixture to form a filtercake and washing the filtercake; next

e) drying and/or grinding the washed filtercake,

wherein an aluminum salt solution is metered into the mixture at step a) and/or step c), the precipitated aluminum-doped silica has a BET surface of more than 300 m^2/g, and the aluminum is distributed uniformly in the aluminum-doped silica.

11. The process of Claim 10, wherein the aluminum salt solution is added to the mixture of water and sodium silicate in step a) of the process, prior to adding the sulfuric acid.

12. The process of Claim 10, wherein the aluminum salt solution is added continuously during step a) and/or step c).

13. The process of Claim 10, wherein the aluminum salt solution is added in step c) and prior to adding the sulfuric acid.

14. The process of Claim 10, wherein at least one or more of steps a), b), and c) are carried out with shearing.

15. A coating comprising the aluminum-doped precipitated silica of Claim 1.

16. Paper coated with the coating of Claim 15

17. Plastic film coated with the coating of Claim 15.

18. Fabric screen coated with the coating of Claim 15.

19. A flatting agent comprising the silica of Claim 1.

20. The coating of Claim 15, further comprising polyvinyl alcohol, wherein the coating has the form of a suspension having a solids content of from 10 to 30% by weight.

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=> file reg
FILE 'REGISTRY' ENTERED AT 10:30:52 ON 18 JUN 2003
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=> display history full l1-


     FILE 'REGISTRY' ENTERED AT 09:03:53 ON 18 JUN 2003
                E SILICA/CN
L1            1 SEA SILICA/CN
                E ALUMINA/CN
L2            1 S E3
L3       225882 SEA AL/ELS NOT C/ELS
L4        51751 SEA L3 NOT AYS/CI
                E SODIUM SILICATE/CN
L5          577 SEA SODIUM#(W)SILICATE#
L6          520 SEA L5 NOT C/ELS

     FILE 'HCA' ENTERED AT 09:11:24 ON 18 JUN 2003
L7       619951 SEA L1 OR (SILICON OR SI)(W)(OXIDE# OR DIOXIDE#) OR
                SILICA# OR SIO2
L8       444476 SEA L2 OR (ALUMINUM# OR AL)(W)(OXIDE# OR TRIOXIDE#) OR
                ALUMINA# OR AL2O3
L9         5836 SEA (PRECIP? OR PPT# OR PPTG# OR PPTN#)(3A)L7
L10       14623 SEA (ALUMINUM# OR AL)(3A)(DOPE# OR DOPING# OR DOPANT? OR
                INTERSPERS? OR INTERCALAT? OR INTERMIX? OR IMMIX? OR
                COMMIX? OR ADMIX?)
L11        5082 SEA L8(3A)(DOPE# OR DOPING# OR DOPANT? OR INTERSPERS? OR
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L13           1 SEA SULFURIC ACID/CN
L14           1 SEA WATER/CN

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L15             QUE L12 OR WATER? OR H2O OR AQ# OR AQUEOUS?
L16      120515 SEA L13 OR (SULFURIC# OR SULFERIC# OR SULPHURIC# OR
                SULPHERIC#)(A)ACID#
L17       50129 S L6 OR (SODIUM# OR NA)(W)SILICATE# OR NA2SIO#
L18      833840 SEA L4 OR (ALUMINUM# OR AL)(A)SALT#
L19           8 S L9 AND L10
L20           5 SEA L9 AND L11
L21         436 S L16 AND L17 AND L18
L22         306 SEA L21 AND L15
L23          10 S L22 AND L9
L24         154 SEA L22 AND L7
L25           3 S L24 AND (L10 OR L11)
L26         875 SEA L7 AND L8 AND L9
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L27            6 SEA L26 AND (L10 OR L11)
L28              QUE DOPE# OR DOPING# OR DOPANT?
L29            7 SEA L26 AND L28
L30       156438 SEA L7 AND L8
L31         2776 SEA L30 AND L28
L32              QUE PRECIP? OR PPT# OR PPTG# OR PPTN#
L33           86 SEA L31 AND L32
L34           31 SEA L33 AND (L9 OR L10 OR L11)
L35           24 SEA L33 AND L15
L36            2 SEA L33 AND L16
L37            4 SEA L33 AND L17
L38           65 SEA L33 AND L18
L39           22 SEA L35 AND L38
L40           11 SEA L34 AND L35
L41           27 SEA L34 AND L38
L42           11 S L34 AND L39
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L45           22 SEA L38 AND L39
L46           11 SEA L40 AND L41 AND L42 AND L43 AND L44 AND L45
L47           21 SEA L19 OR L20 OR L25 OR L27 OR L29 OR L36 OR L37
L48           15 SEA (L23 OR L46) NOT L47
L49           16 SEA L34 NOT (L47 OR L48)
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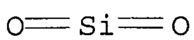
L47 ANSWER 1 OF 21 HCA COPYRIGHT 2003 ACS

138:172670 Doped absorbent materials with enhanced activity. Corzani, Italo; Rossi, Sergio; Rathousky, Jiri; Zukal, Arnost (The Procter & Gamble Company, USA). PCT Int. Appl. WO 2003013719 A1 20030220, 53 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US24698 20020806. PRIORITY: EP 2001-119181 20010808; EP 2002-7096 20020328.

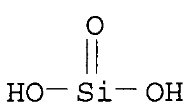
AB A method is disclosed for increasing the activity of doped inorg. adsorbent materials in the adsorption of selected solute species from a gas phase or from a fluid phase. The method consists in

selecting the type, or the amt., or the mol. dimensions of the dopant or dopants, or also in tailoring the pore structure of the doped inorg. adsorbent material through doping. Doped inorg. adsorbent materials produced with this method, and showing enhanced activity towards selected solute species, are also disclosed. The improved doped inorg. adsorbent materials are suitable in a no. of different fields.

IT **1344-28-1**, **Alumina**, uses
(activated; in **doped** adsorbent)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7631-86-9**, **Silica**, uses
(in doped adsorbent)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

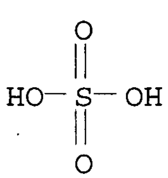


IT **6834-92-0** **7664-93-9**, **Sulfuric acid**, reactions
(in prepn. of doped adsorbent)
RN 6834-92-0 HCA
CN Silicic acid (H2SiO3), disodium salt (8CI, 9CI) (CA INDEX NAME)



2 Na

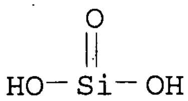
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B01J020-10
ICS B01J020-02; B01J020-08; B01J020-16; B01J020-32
CC 48-1 (Unit Operations and Processes)
Section cross-reference(s): 17, 51, 59, 61, 63
ST Doped absorbent; dehydration odor removal air purifn **water** purifn decolorization

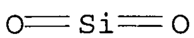
IT Aluminosilicates, uses
Silica gel, uses
(in doped adsorbent)
IT Decolorization
Dehydration
Water purification
(prepn. of doped adsorbent for)
IT **1344-28-1**, **Alumina**, uses
(activated; in **doped** adsorbent)
IT **7631-86-9**, **Silica**, uses
(in doped adsorbent)
IT **6834-92-0** **7664-93-9**, **Sulfuric acid**, reactions
(in prepn. of doped adsorbent)

L47 ANSWER 2 OF 21 HCA COPYRIGHT 2003 ACS
138:172660 **Doped** adsorbent materials with enhanced activity for gas or liquid adsorbates. Corzani, Italo; Rossi, Sergio; Rathousky, Jiri; Zukal, Arnost (The Procter & Gamble Company, USA). Eur. Pat. Appl. EP 1283072 A1 20030212, 23 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-119181 20010808.
AB A method is disclosed for increasing the absorption capacity from a gas-phase or from a fluid-phase by inorg. adsorbents by selection of suitable **dopants**. The method consists in selecting the type, or the amt., or the mol. dimensions of the **dopant** or **dopants**, or also in tailoring the pore structure of the **doped** inorg. adsorbent material through **doping**. Examples of **dopants** include colloidal sized metals, **pptd**. org. salts, and org. mols. The improved **doped** inorg. adsorbent materials are suitable in a no. of different fields where adsorption of one or more selected solute species from a free fluid phase is needed.
IT **1344-28-1**, **Alumina**, uses
(adsorbent; **doped** adsorbent materials with enhanced activity for gas or liq.)
RN 1344-28-1 HCA
CN Aluminum oxide (Al_2O_3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1344-09-8P**, Water Glass
(**doped** adsorbent materials with enhanced activity for gas or liq.)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **6834-92-0**, Sodium metasilicate (**Na_2SiO_3**)
(**doped** adsorbent materials with enhanced activity for gas or liq.)
RN 6834-92-0 HCA
CN Silicic acid (H_2SiO_3), disodium salt (8CI, 9CI) (CA INDEX NAME)



●2 Na

IT **7631-86-9P**, **Silica**, properties
(**doped**; adsorbent materials with enhanced activity for gas or liq.)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM B01J020-10
ICS B01J020-02; B01J020-08; B01J020-16; B01J020-32
CC 48-1 (Unit Operations and Processes)
ST **doped** adsorbent **silica** gel colloidal metal gold acetate salt; pore structure control **doped** adsorbent increased adsorption capacity; homodoping imprinting **doping** **silica** gel adsorbent
IT **Silica** gel, properties
(Kieselgel 40 and Silicagel 123, plain and sodium acetate-**doped**; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Aluminosilicates, uses
Silicates, uses
(adsorbent; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Odor and Odorous substances
(adsorbents for control of; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Health products
(adsorbents for purifn. or delivery of; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Food processing
(adsorbents for; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Metals, uses
(colloidal **dopants**; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Platinum-group metals
(colloidal, **dopant**; **doped** adsorbent materials with enhanced activity for gas or liq.)
IT Metallocenes
Organometallic compounds
(**dopant**; **doped** adsorbent materials with

enhanced activity for gas or liq.)

IT Nanoparticles
(**dopants**; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT Adsorbents
Adsorption
Pore structure
(**doped** adsorbent materials with enhanced activity for gas or liq.)

IT Adsorption
(gas; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT **Dopants**
(nano-sized; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT Molecules
(size, **dopant** selection criterion; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT Body fluid
(treatment or purifn. adsorbents; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT **1344-28-1**, **Alumina**, uses
(adsorbent; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT 7439-92-1, Lead, uses 7439-96-5, Manganese, uses 7439-97-6, Mercury, uses 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-43-9, Cadmium, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses
(colloidal, **dopant**; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT 75-50-3, Trimethylamine, processes 107-92-6, Butanoic acid, processes
(**dopant** and adsorbate; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT 147-14-8, Copper phthalocyanine 2917-26-2, Hexadecylmercaptan
(**dopant**; **doped** adsorbent materials with enhanced activity for gas or liq.)

IT **1344-09-8P**, Water Glass
(**doped** adsorbent materials with enhanced activity for gas or liq.)

IT **6834-92-0**, Sodium metasilicate (**Na2SiO3**)
(**doped** adsorbent materials with enhanced activity for gas or liq.)

IT 75-18-3, Dimethyl sulfide 110-86-1, Pyridine, processes
(**doped** adsorbent materials with enhanced activity for gas or liq.)

IT **7631-86-9P**, **Silica**, properties
(**doped**; adsorbent materials with enhanced activity for gas or liq.)

IT 64-19-7, Acetic acid, reactions
(gelation agent and **dopant** precursor; **doped**

adsorbent materials with enhanced activity for gas or liq.)

IT 127-09-3, Sodium acetate
(**pptd**. **dopant**; **doped** adsorbent
materials with enhanced activity for gas or liq.)

L47 ANSWER 3 OF 21 HCA COPYRIGHT 2003 ACS

138:139200 Method for applying a self-cleaning coating to textile materials. Oles, Markus; Nun, Edwin (Creavis Gesellschaft fuer Technologie und Innovation mbH, Germany). PCT Int. Appl. WO 2003008697 A2 20030130, 17 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2002-EP6122 20020605. PRIORITY: DE 2001-10135157 20010719.

AB The invention relates to a method by which means particles are non-permanently applied to all textile materials and items of clothing using a normal chem. cleaning process. In std. current chem. cleaning processes, perchloroethylene, tetrachloroethylene or heavy naphtha are predominantly used. A hydrophobic aerosil can be suspended in said solvents. Advantageously, the solvents used are suitable for most items of clothing. When a small percentage of the particles is added to said solvents/detergents and items of clothing are cleaned with said suspension, a non-permanent, dirt-repelling layer is directly applied during the chem. cleaning of the textile material. Typical particles are minerals, metal oxides, powd. metals, pigments, pyrogenic silicic acid, **pptd**. silicic acid, **Al2O3**, **silica**, **doped** silicates, pyrogenic silicates, and powd. polymers.

IT **1344-28-1**, **Alumina**, uses **7631-86-9**,
Silica, uses
(powd.; applying self-cleaning coatings to textiles during cleaning with solvents contg. powders)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

IC ICM D06H

CC 46-5 (Surface Active Agents and Detergents)
Section cross-reference(s): 40, 42

ST dry cleaning solvent powd contg; polymer powder self cleaning coating textile; **silica** powder self cleaning coating

textile; **alumina** powder self cleaning coating textile; silicic acid powder self cleaning coating textile; pigment powder self cleaning coating textile; metal powder self cleaning coating textile; mineral powder self cleaning coating textile; oxide metal powder

IT 1343-98-2, Silicic acid **1344-28-1**, **Alumina**, uses **7631-86-9**, **Silica**, uses
(powd.; applying self-cleaning coatings to textiles during cleaning with solvents contg. powders)

L47 ANSWER 4 OF 21 HCA COPYRIGHT 2003 ACS

137:270671 Manufacture of inorganic microparticle having specific grain shape and small grain diameter, inorganic microparticle, rare earth element-activated halogenated barium phosphor, and radiation image conversion panel. Matsumoto, Hiroshi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002274844 A2 20020925, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-74391 20010315.

AB The process comprises forming a crystal or a ppt. in a soln. contg. .gtoreq.1 inorg. compd. by adding a solid material virtually insol. in the soln. to promote crystn. or pptn., and sepg. the crystal or the ppt. The solid material functions as a crystn. or pptn. promoting agent. The soln. is based on a mixt. made up of an aq. soln. contg. BaI_2 and an aq. soln. contg. a fluoride such as NH_4F at [Ba].ltoreq.3.0 mol/L and a F/Ba mol ratio .ltoreq.1. The inorg. microparticle has an aspect ratio 0.5-2, and is represented by BaFI:xLn (Ln = Ce, Pr, Sm, Eu, Tb, Dy, Ho, Nd, Er, Tm, Yb; and 0<x.ltoreq.0.2). The rare earth element-activated halogenated barium phosphor is manufd. from above inrog. microparticle. Also claimed is the radiation image conversion panel (luminescent screen) having a phosphor layer which is made from the rare earth element-activated halogenated barium phosphor. The phosphor having a specific grain shape and a small grain diam. provided excellent image characteristics.

IT **1344-28-1**, **Alumina**, uses **7631-86-9**, **Silica**, uses
(crystn. or **pptn**. promoting agent for prepn. of phosphor microparticle used for luminescent screen)

RN 1344-28-1 HCA

CN Aluminum oxide (Al_2O_3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IC ICM C01F011-20
ICS B01D009-02; C01F011-22; C09K011-00; C09K011-08; C09K011-61; G01T001-00; G21K004-00

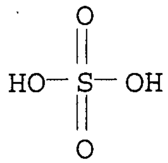
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 75

IT Fluoropolymers, uses
Silica gel, uses
(crystn. or pptn. promoting agent for prepn. of phosphor microparticle used for luminescent screen)
IT Luminescent screens
Phosphors
(phosphor microparticle from Eu-**doped** barium halide for luminescent screen)
IT **1344-28-1**, **Alumina**, uses **7631-86-9**,
Silica, uses 9002-84-0, PTFE 24937-79-9, PVDF
(crystn. or **pptn**. promoting agent for prepn. of phosphor microparticle used for luminescent screen)
IT 7440-53-1, Europium, uses
(**dopant**; prepn. of phosphor microparticle for luminescent screen)
IT 59466-43-2DP, Barium fluoride iodide, **doped** with europium
112286-11-0DP, Barium bromide fluoride iodide (BaBr0.85FI0.15), **doped** with europium
(prepn. of phosphor microparticle for luminescent screen)

L47 ANSWER 5 OF 21 HCA COPYRIGHT 2003 ACS
137:251572 Inorganic acicular bodies and method for manufacture. Vartuli, James Scott; Venkataramani, Venkat Subramaniam (USA). U.S. Pat. Appl. Publ. US 2002141926 A1 20021003, 9 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-681405 20010330.
AB Acicular bodies of a metal compd. are produced by slowly **pptg**. an org. salt of the metal from a soln. of an ester of a dicarboxylic acid having C1-5 and firing the **ppt**. in an oxidizing atm. These acicular bodies have a cross-sectional dimension <20 .mu.m and are useful for providing reinforcement of a larger ceramic body. Acicular bodies of rare-earth metal oxides also are useful in reinforcing x-ray scintillator bodies without diminishing their luminescent capacity.
IT **1344-28-1P**, **Alumina**, preparation
7631-86-9P, **Silica**, preparation
(ceramic matrix and reinforcement; manuf. of acicular ceramics suitable as reinforcement in ceramic composites)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT **7664-93-9**, **Sulfuric acid**, reactions
(manuf. of acicular ceramics suitable as reinforcement in ceramic composites)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C04B035-10
ICS C04B035-14; C04B035-50
NCL 423263000
CC 57-2 (Ceramics)
Section cross-reference(s): 56, 76
IT **1344-28-1P**, **Alumina**, preparation
7631-86-9P, **Silica**, preparation
(ceramic matrix and reinforcement; manuf. of acicular ceramics suitable as reinforcement in ceramic composites)
IT 7440-00-8, Neodymium, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-53-1, Europium, uses 7440-64-4, Ytterbium, uses
(**dopant**; manuf. of acicular ceramics suitable as reinforcement in ceramic composites)
IT 64-19-7, Acetic acid, reactions 77-92-9, Citric acid, reactions 95-92-1, Diethyl oxalate 110-15-6D, Succinic acid, esters 110-94-1D, Glutaric acid, esters 141-82-2D, Malonic acid, esters 144-62-7D, Oxalic acid, esters 553-90-2, Dimethyl oxalate 1314-36-9, Yttria, reactions 2050-60-4, Dibutyl oxalate 7647-01-0, Hydrochloric acid, reactions **7664-93-9**, **Sulfuric acid**, reactions 7697-37-2, Nitric acid, reactions 12064-62-9, Gadolinium oxide (Gd2O3)
(manuf. of acicular ceramics suitable as reinforcement in ceramic composites)

L47 ANSWER 6 OF 21 HCA COPYRIGHT 2003 ACS
137:65297 Doped **precipitate silica** suspensions with low-particle-size distribution and their use a paper filler. Lafon, Marie-Odile; Eychenne-Baron, Christophe (Rhodia Chimie, Fr.). PCT Int. Appl. WO 2002051750 A1 20020704, 23 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (French). CODEN: PIXXD2. APPLICATION: WO 2001-FR4193 20011224. PRIORITY: FR 2000-17119 20001227.
AB The invention concerns a **ppt. SiO2** suspension; .gtoreq.1 metal element at least divalent is bonded to the SiO2 surface. The silica particles have a median diam. of <2 .mu.m. The invention further concerns the use of the suspension as a paper filler and more particularly for enhancing printing properties.

IC ICM C01B033-193
ICS C09C001-30; D21H017-69; D21H021-52
CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 43
ST doped **silica ppt** prepn; paper filler
aluminum doped silica ppt
IT Paper
(prepn. of doped **ppt. silica** suspensions with low-particle-size distribution as filler for)
IT 7429-90-5, **Aluminum**, uses
(**dopant** for **ppt. silica** suspensions with low-particle-size distribution)
IT 1344-09-8, Sodium silicate
(in prepn. of doped **ppt. silica** suspensions with low-particle-size distribution)
IT 7664-93-9, Sulfuric acid, uses 10043-01-3, Aluminum sulfate
(in prepn. of doped **ppt. silica** suspensions with low-particle-size distribution)
IT 7631-86-9P, Silica, preparation
(prepn. of doped **ppt. silica** suspensions with low-particle-size distribution)

L47 ANSWER 7 OF 21 HCA COPYRIGHT 2003 ACS
137:34690 Metal-doped **precipitated silica**. Lindner, Gottlieb-Georg; Mueller, Astrid (Degussa A.-G., Germany). Eur. Pat. Appl. EP 1215171 A2 20020619, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (German). CODEN: EPXXDW. APPLICATION: EP 2001-125619 20011026. PRIORITY: DE 2000-10062449 20001214.

copending appl.

AB Metal-doped, **pptd. SiO2** with the metal atoms largely embedded in the SiO2 structure, useful in prodn. of paper, is **doped** with Al, Zr, Zn, Ti, P, Cr, V, Sc, Ga, In, Fe, Ag, Mn, Co, Ni, or Cu and has sp. surface >300 m2/g and surface concn. of dopant atoms .ltoreq.0.05 mmol/m2. Pptn. of Na silicate in the presence of Zr carbonate by H2SO4 at pH 5.8, acidification to pH 3, washing and drying the **ppt.**, and milling gave **SiO2** with sp. surface 519 m2/g, ZrO2 content 1.49%, and surface Zr concn. 2.33 .mu.mol/m2. Use of the products in paper prodn. is exemplified.
IC ICM C01B033-193
ICS D21H019-40; B41M005-00; D06P001-673; D06M011-79
CC 43-7 (Cellulose, Lignin, Paper, and Other Wood Products)
ST **silica pptd** metal doping; zirconium doping **silica pptd**; paper manuf silica metal doped
IT Metals, uses
(dopants; metal-doped **pptd. silica**)
IT Paper
(metal-doped **pptd. silica** for use in paper prodn.)
IT 7429-90-5, **Aluminum**, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-20-2, Scandium, uses 7440-22-4, Silver, uses 7440-32-6, Titanium, uses

7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-74-6, Indium, uses 7723-14-0, Phosphorus, uses
(**dopant**; metal-**doped pptd. silica**)

IT 7631-86-9, **Silica**, uses
(metal-doped **pptd. silica**)

L47 ANSWER 8 OF 21 HCA COPYRIGHT 2003 ACS

136:281535 Preparation and properties of **alumina-doped precipitated silica** as fillers and dye coatings.
Schubert, Juergen; Hellwig, Klaus-Dieter; Mueller, Astrid (Degussa A.-G., Germany). Eur. Pat. Appl. EP 1193220 A1 20020403, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP 2001-119007 20010807. PRIORITY: DE 2000-10048616 20000930.

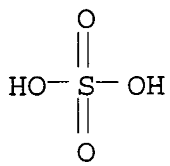
AB The invention concerns **aluminum-doped pptd**. silicic acid, in which the silicic acid particles have a BET surface area of >300 m2/g, particle size <15 .mu.m, a **Al2O3** content of 0.05-0.5 wt.%, and a DBP-uptake value of 200-500 g/100 g, and in which the **aluminum salt** (e.g., **Al2O3**) is evenly distributed in the silicic acid particles. The **silica** is co-**pptd**. with an aluminum compd. in the following steps: (1) mixing and heating an **aq. sodium silicate** soln. to 70-86.degree. and adding enough H2SO4 to neutralize half of the **Na silicate**, (2) aging the mixt. for 30-120 min, (3) adding more **aq**. H2SO4 to a pH of 3.0-7.0, (4) the mixt. is filtered and the filter cake washed, (5) the washed filter cake is spray dried and milled, in which an **aq. aluminum salt** soln. is added in small portions in steps (1) and/or (3). The **alumina-doped pptd. silica** has uses as fillers, matting agents, and dye coatings for lacquers, paper, foils, and canvas.

priority

IT **10043-01-3**, Aluminum sulfate
(**alumina** source; prepn. and properties of **alumina-doped pptd. silica** as fillers and dye coatings)

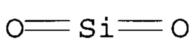
RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)

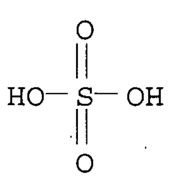


2/3 Al

IT **1344-28-1**, **Alumina**, properties
(**dopant**, co-**pptd**. with **silica**;
prepn. and properties of **alumina-doped**
pptd. **silica** as fillers and dye coatings)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7631-86-9P**, **Silica**, preparation
(**pptd**., manuf. of; prepn. and properties of
alumina-doped pptd. **silica**
as fillers and dye coatings)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

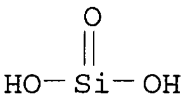


IT **7664-93-9**, **Sulfuric acid**, uses
(**pptg**. agent; prepn. and properties of **alumina**
-doped pptd. **silica** as fillers and
dye coatings)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**, **Sodium silicate**
6834-92-0
(**silica** source; prepn. and properties of
alumina-doped pptd. **silica**
as fillers and dye coatings)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 6834-92-0 HCA
CN Silicic acid (H2SiO3), disodium salt (8CI, 9CI) (CA INDEX NAME)



2 Na

IC ICM C01B033-193
CC 49-8 (Industrial Inorganic Chemicals)
ST **alumina doped pptd silica**
filler dye; paper filler **alumina doped**
silica
IT Dyes
(coatings, formulations for; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)
IT Canvas
Paper
(formulations for; prepn. and properties of **alumina-**
doped pptd. silica as fillers and dye
coatings)
IT Fillers
Matting agents
(prepn. and properties of **alumina-doped**
pptd. silica as fillers and dye coatings)
IT **10043-01-3**, Aluminum sulfate
(**alumina** source; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)
IT 9002-89-5, Polyvinyl alcohol
(coatings, formulations for; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)
IT **1344-28-1**, **Alumina**, properties
(**dopant**, co-**pptd.** with **silica**;
prepn. and properties of **alumina-doped**
pptd. silica as fillers and dye coatings)
IT **7631-86-9P**, **Silica**, preparation
(**pptd.**, manuf. of; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)
IT **7664-93-9**, **Sulfuric acid**, uses
(**pptg.** agent; prepn. and properties of **alumina**
-doped pptd. silica as fillers and
dye coatings)
IT **1344-09-8**, **Sodium silicate**

6834-92-0
(**silica** source; prepn. and properties of
alumina-doped pptd. silica
as fillers and dye coatings)

L47 ANSWER 9 OF 21 HCA COPYRIGHT 2003 ACS
135:341136 Preparation of luminescent-**doped** inorganic nanoparticles and usage as labels for biomolecule probes. Hoheisel, Werner; Petry, Christoph; Bohmann, Kerstin; Haase, Markus; Riwotzki, Karsten (Bayer A.-G., Germany). Ger. Offen. DE 10106643 A1 20011108, 12 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2001-10106643 20010212. PRIORITY: DE 2000-10021674 20000505.

AB The invention concerns luminescent-**doped** inorg. nanoparticles that are used as labels for affinity mols. e.g. nucleic acids, antibodies, proteins, etc.; affinity mols. are directly attached to the nanoparticles or via linker groups, e.g. thiols, amines, imidazoles, mol. self-assemblies, etc. Thus europium-**doped** phosphoric acid, lanthanum(3+) salt (1:1) was prepd. by a previously described wet chem. method; the obtained milky dispersion was centrifuged, dialyzed and dried to obtain the desired particle size. The LaPO4:Eu nanoparticles were coated with **silica** using a basic sodium water glass soln.; sepd. by ethanol **pptn**., centrifugation, ultrasound dispersion, decanting and drying. The **silica** coated nanoparticles were amine-activated with 3-aminopropyltriethoxysilane and treated with sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate (sulfo-SMCC) crosslinker. Antibodies to .alpha.-actin were thiol-activated in a 2-iminothiolane soln. and incubated with the treated luminescent-**doped** inorg. nanoparticles; the obtained luminescent probes were used to visualize actin filaments in rabbit muscles by confocal laser scanning microscopy.

IT **1344-28-1**, **Alumina**, uses
(Eu-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7631-86-9**, **Silicon dioxide**, uses
(**doped** with Dy, Al; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT **1344-09-8**, Water glass
(prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM G01N033-52
ICS G01N033-58; C12Q001-00; C12Q001-68
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 73
ST luminescent **doped** inorg nanoparticle biomol probe fluorescence microscopy
IT Ketones, uses
(1,2-diketones; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Luminescence
(UV; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Surfactants
(anionic; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Heterocyclic compounds
(azolides; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Surfactants
(cationic; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Rare earth metals, uses
(**dopant**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Phosphates, uses
(**doped** with Ce,Tb,of a lanthanide or their mixt.; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Imidic acids
(esters; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Group IIIA element compounds
(gallates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Radioluminescence
(gamma-ray; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Group IVA element compounds
(germanates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Phosphates, uses
(halide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Immunoassay
(luminescence; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Group VB element compounds
(niobates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)
IT Heterocyclic compounds
(nitrogen, five-membered, imidazoles; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for

biomol. probes)

IT Sulfides, uses
(oxy; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT Halides
(phosphates; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT Amines, reactions
(polyamines, nonpolymeric; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT Carboxylic acids, reactions
(polycarboxylic; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT Animal tissue
Biochemical molecules
Blood analysis
Blood plasma
Blood serum
Cathodoluminescence
Cerebrospinal fluid
Dopants
Fluorescence microscopy
Fluorescent substances
Fluorometry
Immobilization, biochemical
Light sources
Luminescence spectroscopy
Luminescent substances
Nanoparticles
Nucleic acid hybridization
Particle size
Plant tissue
Plasmids
Self-assembly
Sputum
Sulfhydryl group
Urine analysis
X-ray luminescence
(prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT Alkali metal halides, uses
Anhydrides
Arsenates
Aryl halides
Borates
Haptens
Isothiocyanates
Molybdates
Oxides (inorganic), uses
Peptides, uses
Phosphates, uses
Polysaccharides, uses

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     Selenides
     Silicates, uses
     Sulfates, uses
     Sulfides, uses
     Sulfonyl halides
        (prepn. of luminescent-doped inorg. nanoparticles and
        usage as labels for biomol. probes)
IT   Antibodies
     Nucleic acids
     Probes (nucleic acid)
     Proteins, general, uses
     Thiols (organic), uses
        (prepn. of luminescent-doped inorg. nanoparticles and
        usage as labels for biomol. probes)
IT   Amines, reactions
     Polysulfones, reactions
     Thioethers
        (prepn. of luminescent-doped inorg. nanoparticles and
        usage as labels for biomol. probes)
IT   Diazonium compounds
        (salts; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Selenides
        (sulfo; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Group VB element compounds
        (tantalates; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Antibodies
        (to .alpha.-actin; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Group VIB element compounds
        (tungstates; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Carbonyl compounds (organic), uses
        (unsatd.; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Group VB element compounds
        (vanadates; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Surfactants
        (zwitterionic; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   Actins
        (.alpha.-; prepn. of luminescent-doped inorg.
        nanoparticles and usage as labels for biomol. probes)
IT   1314-98-3, Zinc sulfide (ZnS), uses
        (Ag, Al, Cu, Mn, Tb, TbF3, Eu, EuF3, lanthanide doped;
        prepn. of luminescent-doped inorg. nanoparticles and
        usage as labels for biomol. probes)
IT   82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
        (Bi-doped; prepn. of luminescent-doped inorg.
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nanoparticles and usage as labels for biomol. probes)

IT 145564-56-3, Calcium magnesium silicate ((Ca,Mg)(SiO3))
(Ce or Ti **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 150927-51-8, Aluminum cerium magnesium terbium oxide (Al11Ce0.65MgTb0.35O19) 186956-28-5, Aluminum magnesium oxide (Al11MgO19)
(Ce, Tb **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 35361-71-8, Aluminum lithium strontium fluoride (AlLiSrF6) 35362-46-0 371759-79-4, Aluminum calcium oxide silicate (Al2Ca2O(SiO3)2)
(Ce-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
(Cu, Al, Ag, Ni **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12024-21-4, Gallium oxide (Ga2O3)
(Dy-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 21669-04-5, Barium bromide fluoride (BaBrF) 122656-71-7, Barium bromide chloride fluoride (BaBr0.5Cl0.5F)
(Eu **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13718-55-3, Barium chloride fluoride (BaClF)
(Eu or Sm **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT **1344-28-1, Alumina**, uses 10377-51-2, Lithium iodide (LiI) 12254-04-5, Aluminum barium magnesium oxide (Al10BaMgO17) 12505-97-4, Boron strontium fluoride oxide (B12Sr3F2O20) 37276-56-5, Calcium strontium chloride phosphate (CaSr9Cl2(PO4)6) 55134-50-4, Aluminum barium magnesium oxide (Al16BaMg2O27) 71012-47-0, Aluminum barium magnesium oxide (Al14BaMgO23) 115968-61-1, Vanadium yttrium oxide phosphate (V0-1YO0-4(PO4)0-1) 119537-26-7, Calcium magnesium sulfide ((Ca,Mg)S) 350480-93-2, Magnesium strontium metaphosphate oxide ((Mg,Sr)2(PO3)2O) 371759-66-9, Aluminum barium magnesium oxide (Al2BaMgO3) 371759-80-7
(Eu-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13597-65-4, Zinc silicate (Zn2SiO4)
(Mn or As-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7789-75-5, Calcium fluoride (CaF2), uses
(Mn or Dy **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7778-18-9, Calcium sulfate (CaSO4)
(Mn or lanthanide **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 10101-39-0

(Mn, Pb, lanthanide **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7779-90-0, Zinc phosphate (Zn3(PO4)2) 12007-60-2, Lithium borate (Li2B4O7) 12159-91-0, Germanium magnesium fluoride oxide (Ge2Mg8F2O11) 12255-72-0, Magnesium arsenate oxide (Mg6(AsO4)2O3) 13776-74-4, Magnesium metasilicate (MgSiO3) 28042-61-7, Magnesium potassium fluoride (MgKF3) 126344-47-6, Magnesium zinc fluoride ((Mg,Zn)F2) 371759-74-9, Beryllium zinc oxide sulfide (BeZn4O4S) 371759-78-3, Cadmium borate oxide (Cd(BO3)O)

(Mn-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 1306-23-6, Cadmium sulfide, uses

(Mn-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12143-49-6, Tantalum yttrium oxide (TaYO4)

(Nb-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7790-75-2, Calcium tungstate (CaWO4)

(Pb or Sm **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13573-11-0, Magnesium tungstate (MgWO4)

(Pb or Sm-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13968-67-7, Barium silicate (BaSi2O5) 200212-20-0, Barium magnesium zinc oxide silicate ((Ba,Mg,Zn)3O(SiO3)2)

(Pb-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 33846-79-6, Barium yttrium fluoride (BaY2F8)

(Pr, Tm, Er, Ce **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 75535-31-8, Calcium chloride fluoride phosphate (Ca5(Cl,F)(PO4)3)

(Sb, Mn **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 106804-21-1, Magnesium strontium phosphate ((Mg,Sr)3(PO4)2)

(Sn-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12031-43-5, Lanthanum oxide sulfide (La2O2S) 13875-40-6, Lanthanum bromide oxide (LaBrO)

(Tb **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13466-21-2, Barium pyrophosphate (Ba2P2O7)

(Ti-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7789-17-5, Cesium iodide (CsI)

(Tl-**doped** or sodium-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7681-82-5, Sodium iodide (NaI), uses

(Tl-**doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 1314-13-2, Zinc oxide (ZnO), uses
(Zn,Si,Ga **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7429-90-5, Aluminum, uses 7429-91-6, Dysprosium, uses 7439-92-1, Lead, uses 7439-96-5, Manganese, uses 7440-00-8, Neodymium, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-28-0, Thallium, uses 7440-30-4, Thulium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses 7440-53-1, Europium, uses 7440-55-3, Gallium, uses 7440-64-4, Ytterbium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses
(**dopant**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 76125-60-5, Aluminum strontium oxide (Al14Sr4O25)
(**doped** Eu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 75529-26-9, Gadolinium magnesium borate (GdMgB5O10)
(**doped** with Ce, Tb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT **7631-86-9**, **Silicon dioxide**, uses
(**doped** with Dy, Al; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 113671-38-8, **Silicon oxide** (SiO0-2)
(**doped** with Er, Al; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 31387-71-0, Barium ytterbium fluoride (BaYb2F8)
(**doped** with Er; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12027-88-2, Yttrium silicate (Y2SiO5) 12340-04-4, Yttrium oxide sulfide (Y2O2S)
(**doped** with Eu or other lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12032-36-9, Magnesium sulfide (MgS)
(**doped** with Eu, Ce, Sm or combination; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13778-59-1, Lanthanum phosphate (LaPO4)
(**doped** with Eu, Ce, Tb, Dy, Nd; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13566-12-6, Vanadium yttrium oxide (VYO4)
(**doped** with Eu, Sm, Dy, In; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 1314-36-9, Yttrium oxide (Y2O3), uses
(**doped** with Eu, Tb or other lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as

labels for biomol. probes)

IT 13568-56-4, Lutetium vanadium oxide ($LuVO_4$) 13628-52-9, Gadolinium vanadium oxide ($GdVO_4$) 124676-67-1, Gadolinium yttrium borate ((Gd,Y)(BO_3)) 230313-54-9, Gallium yttrium borate ((Ga,Y)(BO_3))
(**doped** with Eu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7789-24-4, Lithium fluoride (LiF), uses
(**doped** with Mg, Ti, Na or their combination; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7783-40-6, Magnesium fluoride (MgF_2)
(**doped** with Mn or lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13709-38-1, Lanthanum fluoride (LaF_3)
(**doped** with Nd, Ce, Yb, Er, Tm; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12031-63-9, Lithium niobate ($LiNbO_3$)
(**doped** with Nd, Yb, Er; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 371759-81-8, Aluminum yttrium borate oxide ($Al_3Y(BO_3)_3O_3$)
(**doped** with Nd, Yb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 69142-81-0, Gadolinium strontium silicate ($Gd_2Sr_3Si_6O_{18}$)
(**doped** with Pb,Mn; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 25617-97-4, Gallium nitride (GaN)
(**doped** with Pr, Eu, Er, Tm; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12003-86-0, Aluminum yttrium oxide ($AlYO_3$) 26916-94-9, Lithium lutetium fluoride ($LiLuF_4$)
(**doped** with Pr, Tm, Er, Ce; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 1314-96-1, Strontium sulfide (SrS)
(**doped** with Sm, Ce, Eu, Ag, Cu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13812-81-2, Strontium pyrophosphate ($Sr_2P_2O_7$)
(**doped** with Sn or Eu; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 371759-82-9, Aluminum gallium yttrium oxide ($Al_3Ga_2Y_2O_{12}$)
(**doped** with Tb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13759-29-0, Yttrium chloride oxide (YClO) 14118-26-4, Lanthanum sodium fluoride ($LaNaF_4$) 14118-34-4, Sodium yttrium fluoride ($NaYF_4$) 15640-94-5, Gadolinium sodium fluoride ($GdNaF_4$) 26874-36-2, Barium yttrium fluoride ($BaYF_5$)

(**doped** with Yb, Er; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13709-49-4, Yttrium fluoride (YF3)
(**doped** with Yb,Er, lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12592-70-0, Gallium strontium sulfide (Ga2SrS4)
(**doped** with lanthanide, Pb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12005-21-9, Aluminum yttrium oxide (Al5Y3O12) 23108-36-3, Lithium yttrium fluoride (LiYF4)
(**doped** with lanthanide; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 1305-78-8, Calcium oxide, uses
(**doped** with lanthanides; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 12339-07-0, Gadolinium oxide sulfide (Gd2O2S)
(**doped** with tb; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 20548-54-3, Calcium sulfide (CaS)
(lanthanide or Bi **doped**; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 58-85-5, Biotin 503-68-4D, Diazoacetic acid, deriv. 541-59-3D, Maleimide, deriv. 661-20-1D, Isocyanate, deriv. 7439-97-6D, Mercury, org. deriv., uses 11098-82-1, Aluminate 12233-56-6, Bismuth germanate (Bi4Ge3O12) 20830-75-5, Digoxin 144419-68-1, Aluminum barium cerium magnesium oxide (Al11(Ba,Mg)CeO19)
(prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 113-00-8, Guanidine 120-72-9D, Indole, derivs. **1344-09-8**, Water glass 6539-14-6, 2-Iminothiolane 64987-85-5
(prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 13708-63-9, Terbium fluoride (TbF3) 13765-25-8, Europium fluoride (EuF3)
(with ZnS; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

IT 7440-27-9, Terbium, uses
(with mixed oxides; prepn. of luminescent-**doped** inorg. nanoparticles and usage as labels for biomol. probes)

L47 ANSWER 10 OF 21 HCA COPYRIGHT 2003 ACS

133:201261 Thermal oxidation of high dose aluminum implanted silicon. Iacona, Fabio; Raineri, Vito; La Via, Francesco; Privitera, Vittorio; Gasparotto, Andrea; Rimini, Emanuele (CNR-IMETEM, Catania, 95121, Italy). Journal of the Electrochemical Society, 147(7), 2762-2765 (English) 2000. CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical Society.

AB The Al redistribution in the SiO2/Si system was investigated during thermal oxidn. of high dose Al-implanted Si wafers. Only a small fraction of the implanted Al atoms remains elec. active in the substrate, and this amt. decreases when thicker oxides are grown. About 50% of the implanted Al is distributed inside the growing oxide at a concn. of .apprxeq.1020 cm-3. Al atoms are embedded in the SiO2 layers through 2 distinct mechanisms: the dopant redistribution during oxidn., due to the low Al segregation coeff., and the inclusion of small Al-contg. ppts. formed inside the Si substrate due to the low Al soly. and its great reactivity with O. Furthermore, a relevant Al fraction evaps. during the 1st stages, including the temp. ramp-up, of the oxidn. process. Also, the inclusion of Al-contg. **ppts**. in the **SiO2** layer leads to the formation of very rough oxide surfaces.
CC 76-2 (Electric Phenomena)
IT Ion implantation
  Precipitates
  Segregation
  (Al redistribution in **SiO2**/Si system investigated during thermal oxidn. of high dose Al-implanted Si wafers)
IT 7429-90-5, **Aluminum**, properties
  (**dopant**; **Al** redistribution in SiO2/Si system investigated during thermal oxidn. of high dose Al-implanted Si wafers)

L47 ANSWER 11 OF 21 HCA COPYRIGHT 2003 ACS
131:203393 Effects of bicomponent additives on thermal decomposition of Al2TiO5. Kim, Sung Wook; Lee, Hyung Jik; Lee, Hong Lim (Department of Ceramic Engineering, Yonsei University, Seoul, 120-749, S. Korea). Yoop Hakhoechi, 36(6), 632-639 (Korean) 1999. CODEN: YPHJAP. ISSN: 0372-7807. Publisher: Korean Ceramic Society.
AB To fabricate thermally stabilized Al2TiO5 ceramics, equimolar .alpha.-**Al2O3** and TiO2 were mixed with bicomponent additives of 2, 5 and 10 mol% of equimolar MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** mixt. and pressed before sintering at 1500.degree.C for 2 h. Sintered bodies were heat-treated at 1150.degree.C for 24 h. X-ray diffractometer was used for the phase anal. and measurement of lattice parameters. MgO/**SiO2** **doped** Al2TiO5 ceramics was the most effective in suppression of thermal decompn., which seemed to be a combined effect of moderating of structural distortion due to substitution of Al3+ by Mg2+ and the reaction products of its **pptd**. oxide, **Al2O3**, and **SiO2**.
IT **7631-86-9**, **Silica**, uses
  (sintering aid, bicomponent; effects of MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** bicomponent additives on thermal decompn. of Al2TiO5 ceramics)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O══Si══O

CC 57-2 (Ceramics)
ST aluminum titanate ceramic bicomponent additive thermal decompn; **silica** bicomponent additive aluminum titanate ceramic thermal decompn; magnesia bicomponent additive aluminum titanate ceramic thermal decompn; zirconia bicomponent additive aluminum titanate ceramic thermal decompn
IT Ceramics
(aluminum titanate; effects of MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** bicomponent additives on thermal decompn. of Al2TiO5 ceramics)
IT Sintering aids
(bicomponent; effects of MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** bicomponent additives on thermal decompn. of Al2TiO5 ceramics)
IT Crystal structure
Thermal decomposition
(effects of MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** bicomponent additives on thermal decompn. of Al2TiO5 ceramics)
IT 12004-39-6, Aluminum titanium oxide (Al2TiO5)
(ceramics; effects of MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** bicomponent additives on thermal decompn. of Al2TiO5 ceramics)
IT 1309-48-4, Magnesium oxide (MgO), uses 1314-23-4, Zirconium oxide (ZrO2), uses **7631-86-9**, **Silica**, uses
(sintering aid, bicomponent; effects of MgO/ZrO2, **SiO2**/ZrO2 and MgO/**SiO2** bicomponent additives on thermal decompn. of Al2TiO5 ceramics)

L47 ANSWER 12 OF 21 HCA COPYRIGHT 2003 ACS
127:224221 Environmentally safe inorganic coating material for asbestos fibers and asbestos-containing materials. Forkel, Klaus; Pitsch, Irene; Bertram, Rainer; Wihsmann, Fred Gustav (WITEGA Angewandte Werkstoff-Forschung Gemeinnuetzige GmbH Adlershof, Germany). Ger. Offen. DE 19609373 A1 19970904, 3 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1996-19609373 19960229.
AB The coating material consists of an acidic aq. or alc. soln. (pH 2-6) of a basic **Al** salt, optionally in **admixt**. with acidic stable acidic SiO2 sol solns. and/or unstable acidic Sio2 hydrosols and/or nano- or micro-**SiO2**, i.e., **pptd**. or fumed **SiO2**. The inorg. coating renders the asbestos harmless.
IC ICM C03C025-02
ICS A62D003-00; D06M011-45; D06M011-79
CC 57-6 (Ceramics)

L47 ANSWER 13 OF 21 HCA COPYRIGHT 2003 ACS
127:139360 Foamable paste and multicomponent paste compositions for obtaining porous inorganic rigid foam products, the fireproofing porous rigid foam products obtained, and process for their formation. Krafft, Alfred-Peter (Krafft, Alfred-Peter, Germany). PCT Int. Appl. WO 9725291 A2 19970717, 49 pp. DESIGNATED STATES: W:

AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (German). CODEN: PIXXD2. APPLICATION: WO 1997-DE87 19970109. PRIORITY: DE 1996-29600466 19960112; DE 1996-29616052 19960914.

AB The compns. comprise a pasty inorg. stone-forming component contg. .gtoreq.1 stone-forming components and, addnl., .gtoreq.1 compds. capable of releasing gas at pH 2-14 or .gtoreq.1 pH-changing compds., or no pH-changing compd. or no gas-releasing compd. For foaming and/or hardening the stone-forming components, the compns. addnl. contain .gtoreq.1 **water**-contg. pasty hardener and/or .gtoreq.1 pasty components capable of releasing gas and/or .gtoreq.1 pasty pH-changing components and/or a combination thereof, in an amt. sufficient for affecting porosity and/or consistency. The fireproofing porous rigid foam products have d. 40-1000 kg/m3, relative compressive strength 0.2-60 N/mm2, and av. pore diam. 0.1-10 mm. The compns. have fire-resistance (DIN 4102 part 9) >180 min, and meet the requirements for building material class A1 (DIN 4102 part 1) and for fire resistance class S 180 and R 120 (DIN 4102 part 11). The ratio of vol. of the foamed products to the vol. of the above individual components is 1:1 to 10:1. The porous products are obtained by mixing the components in a 2- or 3-element static mixer whose length is such that the mixt. leaving the mixer is an at least partially foamed paste that is introduced into a mold for further foaming and/or hardening. A typical mixt. contains fly ashes, Al, **water**, pH stabilizer, and **water** glass, talc, and Bentone.

IT **7631-86-9**, **Silica**, uses
(amorphous, fume, stone-forming component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

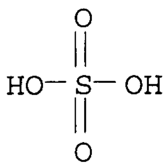
O=Si=O

IT **7732-18-5**, **Water**, uses
(carrier; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
RN 7732-18-5 HCA
CN Water (8CI, 9CI) (CA INDEX NAME)

H_2O

IT **1344-09-8**, **Sodium silicate**
7664-93-9, **Sulfuric acid**, uses
(pH-changing component; in multicomponent paste compns. for

manufg. porous inorg. rigid cellular fireproofing products)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7429-90-5**, Aluminum, uses
(powd., gas-generating compd.; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT **1302-74-5**, Corundum, uses **1318-45-2**, Dickite **1344-28-1**, Alumina, uses **11104-48-6**, Calcium aluminate **12279-65-1**, Nacrite **15123-81-6**, Metakaolin
(stone-forming component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
RN 1302-74-5 HCA
CN Corundum (Al2O3) (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1318-45-2 HCA
CN Dickite (Al2(OH)4(Si2O5)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O5Si2	1	20328-07-8
HO	4	14280-30-9
Al	2	7429-90-5

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 11104-48-6 HCA
CN Aluminum calcium oxide (9CI) (CA INDEX NAME)

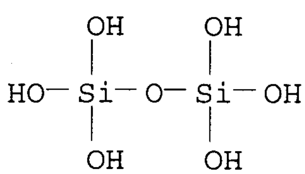
Component	Ratio	Component Registry Number
O	x	17778-80-2

Ca	x	7440-70-2
Al	x	7429-90-5

RN 12279-65-1 HCA
CN Nacrite (Al2(OH)4(Si2O5)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O5Si2	1	20328-07-8
HO	4	14280-30-9
Al	2	7429-90-5

RN 15123-81-6 HCA
CN Metakaolinite (Al2(Si2O7)) (9CI) (CA INDEX NAME)



●2 Al

IC ICM C04B028-02
ICS C04B028-26; C04B038-02; C09K021-02; C09K021-06
CC 58-4 (Cement, Concrete, and Related Building Materials)
IT 1309-37-1, Ferric oxide, uses
(**admixts**. with **alumina** and **silica**, stone-forming component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
IT **7631-86-9**, **Silica**, uses
(amorphous, fume, stone-forming component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses **7732-18-5**, **Water**, uses 35296-72-1, Butanol 62309-51-7, Propanol
(carrier; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)
IT 64-19-7, Acetic acid, uses 77-92-9, uses 1305-62-0, Calcium hydroxide, uses 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 1312-76-1, Potassium silicate **1344-09-8**, **Sodium silicate** 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 17194-00-2, Barium hydroxide
(pH-changing component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)

IT **7429-90-5**, Aluminum, uses 7439-95-4, Magnesium, uses
(powd., gas-generating compd.; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)

IT **1302-74-5**, Corundum, uses **1318-45-2**, Dickite
1344-28-1, Alumina, uses 1344-95-2, Calcium silicate
11104-48-6, Calcium aluminate 11113-52-3, Calcium ferrite
12279-65-1, Nacrite 14378-12-2, Steatite 14807-96-6,
Talc, uses **15123-81-6**, Metakaolin
(stone-forming component; in multicomponent paste compns. for manufg. porous inorg. rigid cellular fireproofing products)

L47 ANSWER 14 OF 21 HCA COPYRIGHT 2003 ACS

125:303013 Rubber compositions containing **aluminum-doped precipitated silica** for use in tire treads. Vanel, Robert (Michelin et Cie., Fr.). Eur. Pat. Appl. EP 735088 A1 19961002, 12 pp. DESIGNATED STATES: R: AT, BE, DE, ES, FR, GB, IT, LU. (French). CODEN: EPXXDW. APPLICATION: EP 1996-103827 19960312. PRIORITY: FR 1995-4077 19950329.

AB The title compns., with decreased coupler requirements, contain diene rubbers and **pptd. SiO2** doped with 0.35-3% Al. A compounded 25:75 butadiene rubber-SBR blend contg. 9.6 phr coupler and 80 phr SiO2 **doped** with 0.97% **Al** gave vulcanizates with Shore A hardness 69.9, 100% modulus 2.04 MPa, 300% modulus 2.63 MPa, tensile strength 19.7 MPa, elongation 500%, and hysteresis loss (60.degree.) 25.0; vs. 69.5, 1.94, 2.48, 20.3, 526, and 25.8, resp., with undoped SiO2 and 12.8 phr coupler.

IC ICM C08L009-04
ICS B60C001-00; C08L021-00; C08K003-36

CC 39-13 (Synthetic Elastomers and Natural Rubber)

ST filler rubber tire tread; silica filler rubber tire; **aluminum doping** silica filler; SBR blend tire filler; butadiene rubber blend filler

US 5,852,099

IT Rubber, butadiene, properties
Rubber, butadiene-styrene, properties
Rubber, isoprene, properties
Rubber, natural, properties
(rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)

IT Rubber, synthetic
(butadiene-isoprene-styrene, rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)

IT Tires
(treads, rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)

IT 7631-86-9, Silica, properties
(**aluminum-doped**; rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)

IT 7429-90-5, **Aluminum**, properties
(**dopant**; rubber compns. contg. **aluminum-doped pptd. silica** for use in tire

treads)
IT 9003-17-2 9003-31-0 9003-55-8
(rubber, rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)
IT 26602-62-0, Butadiene-isoprene-styrene copolymer
(rubber; rubber compns. contg. **aluminum-doped pptd. silica** for use in tire treads)

L47 ANSWER 15 OF 21 HCA COPYRIGHT 2003 ACS
114:148621 Electron microscopy and EDX-microanalysis of photochromic silver halide glasses of the composition systems **alumina**-boron oxide-**silica** and sodium oxide-calcium oxide-**silica**. Rincon, J. M.; Marquez, H.; Rivera, E. (Inst. Ceram. Vidrio, CSIC, Madrid, Spain). Journal of Materials Science, 26(5), 1192-8 (English) 1991. CODEN: JMTSAS. ISSN: 0022-2461.
AB The microstructure and microanal. study of 2 glasses contg. AgCl **pptd.** particles were carried out by TEM (replica method), SEM, and SEM/EDX (energy dispersive x-ray spectrometry). The compn. of these glasses **doped** with Ag halide and CuO was formulated from the **Al_2O_3**-B_2O_3-**SiO_2** and Na_2O-CaO-**SiO_2** systems. In both glasses the seeds, nuclei, crystals, and matrix were analyzed, and the mean size and no. of crystals were evaluated from the TEM and SEM observations. The microstructure in both glasses is different because of the different shape of the Ag halide particles; the particles of the **Al_2O_3**-B_2O_3-**SiO_2** glass are rounded while Na_2O-CaO-**SiO_2** shows square **pptd.** particles. Likewise, the darkening behavior is basically different; the **Al_2O_3**-B_2O_3-**SiO_2** glass shows a higher darkening velocity than the Na_2O-CaO-**SiO_2** glass, showing for this glass a very small slope value.
CC 57-1 (Ceramics)
Section cross-reference(s): 73
IT Photochromism
(of glass, aluminoborosilicate and calcium **sodium silicate**, silver halide-contg., microstructure in relation to)
IT Glass, oxide
(photochromic, calcium **sodium silicate**, silver halide-contg., microanal. and microstructure of)
IT 7775-41-9, Silver fluoride 7783-90-6, Silver chloride, uses and miscellaneous 7785-23-1, Silver bromide
(photochromic glass contg. **pptd.**, microanal. and microstructure of)

L47 ANSWER 16 OF 21 HCA COPYRIGHT 2003 ACS
110:50316 Extraction-photometric determination of **aluminum** in **doped** bismuth silicon oxide ($Bi_{12}SiO_{20}$) single crystals and charges for their preparation. Nechitailov, A. A.; Prokof'ev, V. V.; Krasin'kova, M. V. (Fiz.-Tekh. Inst. im. Ioffe, Leningrad, USSR). Zavodskaya Laboratoriya, 54(6), 26 (Russian) 1988. CODEN: ZVDLAU. ISSN: 0044-1910.

AB Al (5 .times. 10-4-1 .times. 10-1%) was detd. by spectrophotometry of its quinolinol complexes after matrix removal. Si was sepd. as silica gel. The bulk of Bi was pptd. as BiOCl. Residual Bi was extd. as diethyldithiocarbamate by CCl4 at pH 9.5.
CC 79-6 (Inorganic Analytical Chemistry)
IT 7440-21-3, Silicon, analysis
(sepn. of, from aluminum, by **pptn**. of **silica** gel)

L47 ANSWER 17 OF 21 HCA COPYRIGHT 2003 ACS
107:63532 Methods of analyzing refractory materials with elevated chromium contents, chrome **alumina**, chrome magnesite.
Bastius, Helmut (Inst. Gesteinshuettenkd., RWTH Aachen, Aachen, D-5000, Fed. Rep. Ger.). CFI, Ceramic Forum International, 64(3-4), 81-4 (English/German) 1987. CODEN: CCFDD7. ISSN: 0173-9913.
AB Methods are described for the anal. of highly heat-resistant materials with elevated chrome contents (chrome-**Al2O3** and chrome-magnesite). The Al detn., as part of the chrome-**Al2O3** anal., involves pretreatment with H2SO4, oxidn. of the chrome fraction to form chromate and, after sepn. of the **SiO2**, **pptn**. as Al(OH)3 by gravimetry. The low-fraction constituents were detd. through pretreatment with H2SO4, dissoln. by orthophosphoric acid, followed by at. absorption spectroscopy, with disturbances due to high fraction Al and H3PO4 being eliminated by matrix adjustment. Chrome magnesite anal. is based on dissoln. with concd. H2SO4. The high-fraction Mg content is detd. gravimetrically as MgSO4 subsequent to the elimination of disturbances. The low-fraction constituents are detd. in sep. solns., again via at. absorption spectroscopy. Potential mutual disturbances on the part of various sample constituents are investigated on the basis of the results of direct detns. of sample solns. compared with those obtained from sample solns. **doped** with element std. soln. and tabulated.
CC 57-6 (Ceramics)
Section cross-reference(s): 79
ST chrome refractory analysis; **alumina** chrome refractory analysis; magnesite chrome refractory analysis

L47 ANSWER 18 OF 21 HCA COPYRIGHT 2003 ACS
97:201749 Manufacture of magnetic powder. (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57116705 A2 19820720 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-2311 19810110.
AB Magnetic powder is manufd. by coating the powd. Fe compds. (goethite, Fe2O3, Fe3O4, etc.) with an Al compd. and a Si compd., heating at 500-1000.degree., and reducing in H. Thus, an alk. soln. contg. a dispersion of Ni-diffused goethite particles was mixed with aq. Al2(SO4)3 and Na4SiO4, and sparged with CO2 to adjust pH .ltoreq.10 to **ppt**. hydrated **Al2O3** and **SiO2** on the particles. The coated particles were sepd., cleaned, dried, heated in air, and reduced in H at 500.degree.. The product was powd. Fe contg. Ni and Si, and having good magnetic properties.

IC B22F009-20
ICA H01F001-06
CC 55-4 (Ferrous Metals and Alloys)
Section cross-reference(s): 77
ST magnetic iron powder manuf redn; nickel **doping** magnetic powder manuf; silicon **doping** magnetic powder manuf; **aluminum doping** magnetic powder manuf
IT 7440-21-3, uses and miscellaneous
(**doping** with **aluminum** and nickel and, in magnetic powder manuf.)
IT 7440-02-0, uses and miscellaneous
(**doping** with **aluminum** and silicon and, in magnetic powder manuf.)
IT 7429-90-5, uses and miscellaneous
(**doping** with nickel and silicon and, in magnetic powder manuf.)
IT 1310-14-1
(iron powder from, **aluminum**-nickel-silicon **doped** magnetic, manuf. of)
IT 1309-37-1, uses and miscellaneous 1309-38-2, uses and miscellaneous
(iron powder from, **aluminum**-nickel-silicon **doped** magnetic, manuf. of,)
IT 7439-89-6P, preparation
(powder, **aluminum**-nickel-silicon **doped** magnetic, manuf. of, from goethite)

L47 ANSWER 19 OF 21 HCA COPYRIGHT 2003 ACS
81:6657 Catalysts by hydrothermal method. Jaffe, Joseph (Chevron Research Co.). U.S. US 3791963 19740212, 4 pp. Continuation-in-part of U.S. 3,652,457 (CA 77;115755g). (English). CODEN: USXXAM. APPLICATION: US 1970-39173 19700520.
AB A cracking catalyst consisted of a synthetic layered cryst. clay-like aluminosilicate mineral in **admixture** with an amorphous **Al2O3-SiO2** cogel. An aq. acidic soln. of AlCl3 and HOAc were mixed with a dil. Na silicate soln. **Al2O3** and **SiO2** were **pptd**. by the addn. of a NH4OH soln. NH4 bifluoride was added to provide 0.1-3% F. After filtration the slurry was partially dried to 25% solids, pelleted and aged for 0.5-2 hr at 1400 psig and 300.degree.. The pellets can be impregnated with catalytic metals as Ni, Co, Pt, Pd, and Re, for use in hydrocarbon conversions.
IC C10G
NCL 208111000
CC 67-1 (Catalysis and Reaction Kinetics)
ST **alumina** cracking catalyst hydrothermal; hydrocarbon cracking aluminosilicate catalyst

L47 ANSWER 20 OF 21 HCA COPYRIGHT 2003 ACS
67:75333 Sediments from acid volcanic waters and chemical differentiation. Naboko, S. I.; Fil'kova, E. M. Biulleten Vulkanologicheskoi Stantsii, Akademiia Nauk S.S.S.R., Laboratoriia

Vulkanologii, No. 42, 33-41 (Russian) 1966. CODEN: BYVKAA.

AB Various types of thermal waters exist simultaneously in areas of an active volcano: alk. Na-chloride, acid chloride-sulfate, and predominately sulfate. There is a gradual transition; the waters represent a single genetic series. The area of Mendeleev Volcano in Kunashir Island is a classical example of development of various types of thermal water and sediments. Geyserite (opal), kaolinite + opal, jarosite + Fe hydroxides, amorphous **silica**, S, S + pyrite with small admixts. of alunite, gypsum, and other minerals deposited from waters of various compns. in this area. Chem. differentiation was observed during pptn. of components from acid thermal water. The amts. of **SiO2**, TiO2, **Al2O3**, MnO, and Na2O decreased and those of Fe2O3, K2O, P2O5, As2O3, and SO3 increased in the sediments as one goes away from the outlet of the hydrothermal spring. Part of the trace elements had a tendency to conc. in the 1st sediments of **SiO2** and **Al2O3** in the outlets of the spring (Ag, Sn, Cu, Ga, Sc, Y, Yb, Zr, and Sr). On the contrary, the Pb, V, In, Ni, and Ba enriched the jarosite and Fe hydroxide sediments further away. The following chem. groups of hydrous sediments were deposited from acid sulfate-chloride springs; (1) **SiO2** + TiO2, (2) **SiO2** + **Al2O3** + TiO2, (3) **SiO2** + Fe2O3 + TiO2, (4) **SiO2** + **Al2O3** + Fe2O3 + TiO2, (5) Fe2O3 + (K, Na)2O + SO3 + P2O5, and (6) Fe2O3 + P2O5. Differentiation of components, which began to migrate simultaneously in acid sulfate-chloride water, resulted in a horizontal zoning of the sediments from spring outlet to its inflow into the river. The 1st sediment was rich in **SiO2**-**Al2O3**-TiO2, more distant sediments were rich in Fe2O3-(K + Na)2SO3 (jarosite with small **admixt**. of **SiO2** and **Al2O3**), and the most distant sediments contained Fe oxides hydrates. The ore components had a tendency to enrich the 1st amorphous **SiO2** and **Al2O3** sediments. The **SiO2 pptd**. from acid sulfate-chloride waters, differed from the **SiO2** sediments, **pptd**. from alk. overheated waters, in higher contents of **Al2O3** and TiO2.

IT **7631-86-9P**, preparation
   (formation of, in sediments of Mendeleev Volcano, Kunashir Island)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT **1344-28-1**, occurrence
   (in sediments of Mendelev Volcano, Kunashir Island)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 53 (Mineralogical and Geological Chemistry)
IT 1302-91-6P 1309-36-0P, iron, preparation 1318-74-7P, preparation

7631-86-9P, preparation 7704-34-9P, preparation
12207-14-6P 13397-24-5P, preparation 14639-88-4P
(formation of, in sediments of Mendeleev Volcano, Kunashir Island)
IT 1309-37-1, occurrence 1313-59-3 1314-56-3 1327-53-3
1344-28-1, occurrence 1344-43-0 12136-45-7
(in sediments of Mendelev Volcano~~, Kunashir Isl~~and)

L47 ANSWER 21 OF 21 HCA COPYRIGHT 2003 ACS
45:2033 Original Reference No. 45:341g-h Coprecipitation of **silica-alumina** gel. Schmerling, Louis (Universal Oil Products Co.). US 2526907 19501024 (Unavailable). APPLICATION: US .
AB An aq. soln. of an alkali metal silicate is **admixed** with an aq. **alumina** sol contg. in soln. an org. acid (dissocn. const. less than 1 .times. 10-3). The silicate is hydrolyzed to an aq. **silica** sol and, in time, an **alumina** and **silica** co-gel is **pptd**., which is useful as a catalyst in promoting hydrocarbon-conversion reactions.
IT **7631-86-9, Silica**
(colloid with **Al2O3**, copptn. of)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT **1344-28-1, Alumina**
(colloids with **SiO2**)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 22 (Petroleum, Lubricants, and Asphalt)
IT Hydrocarbons
(conversion of, **Al2O3-SiO2** gel catalysts for)
IT Catalysts
(for hydrocarbon conversion, **Al2O3-SiO2** gel composite)
IT **7631-86-9, Silica**
(colloid with **Al2O3**, copptn. of)
IT **1344-28-1, Alumina**
(colloids with **SiO2**)

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L48 ANSWER 1 OF 15 HCA COPYRIGHT 2003 ACS
137:355024 Procedure for the production of **precipitated silica** and silicates by acid precipitation of silicates under constant cation excess. Lindner, Gottlieb-Georg (Degussa Ag, Germany). Ger. Offen. DE 10124298 A1 20021121, 20 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2001-10124298 20010517.

Copending

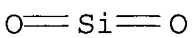
date is not good

AB Manuf. of **pptd**. **silica** or a silicate results by
(1) dosing a Lewis or Broensted acid e.g. H2SO4 to a silicate soln.
e.g. sodium **water** glass soln., (2) adjustment of pH up to
7-3.0., (3) filtration, and (4) drying; whereby the step 1 is
carried out under const. cation excess esp. Na+ or Na2O excess.

IT **7631-86-9P**, **Silica**, preparation
(**pptd**.; procedure for prodn. of **pptd**.
silica and silicates by acid pptn. of silicates under
const. cation excess)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**, Sodium **water** glass **7664-93-9**,
Sulfuric acid, reactions
(procedure for prodn. of **pptd**. **silica** and
silicates by acid pptn. of silicates under const. cation excess)

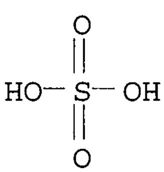
RN 1344-09-8 HCA

CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7429-90-5D**, **Aluminum**, **salts**
(procedure for prodn. of **pptd**. **silica** and
silicates by acid pptn. of silicates under const. cation excess
keeping by addn. of)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC ICM C01B033-187
ICS A23K001-16; C11D007-14; C09D007-12; C08K003-36; A61K007-16;
B01J021-08

CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 17, 46, 63

ST sodium **water** glass pptn **sulfuric acid**;
silica manuf; silicate manuf

IT Paints
(additives for; procedure for prodn. of **pptd**.
silica and silicates by acid pptn. of silicates under

const. cation excess as carrier for)
IT Precipitation (chemical)
(pH-controlled; procedure for prodn. of **pptd.** **silica** and silicates by acid pptn. of silicates under const. cation excess)
IT Bronsted acids
Lewis acids
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
IT Silicates, preparation
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
IT Detergents
Perfumes
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
IT Aminoplasts
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
IT Catalyst supports
Dentifrices
Flocculants
Food additives
Primary battery separators
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess for)
IT Electrolytes
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess keeping by addn. of)
IT **7631-86-9P**, **Silica**, preparation
(**pptd.**; procedure for prodn. of **pptd.** **silica** and silicates by acid pptn. of silicates under const. cation excess)
IT **1344-09-8**, Sodium **water** glass **7664-93-9**, **Sulfuric acid**, reactions
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess)
IT 50-21-5, Lactic acid, biological studies 67-48-1, Choline chloride 79-09-4, Propionic acid, biological studies 7664-38-2, Phosphoric acid, biological studies 9003-08-1, Melamine resin
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
IT 64-18-6, Formic acid, biological studies
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess as carrier for)
IT **7429-90-5D**, **Aluminum, salts**

7439-89-6D, Iron, salts 7439-95-4D, Magnesium, salts 7440-32-6D, Titanium, salts 7440-67-7D, Zirconium, salts 7440-70-2D, Calcium, salts
(procedure for prodn. of **pptd. silica** and silicates by acid pptn. of silicates under const. cation excess keeping by addn. of)

L48 ANSWER 2 OF 15 HCA COPYRIGHT 2003 ACS
134:89954 MgO-TiO2-**doped alumina** ceramics with low dielectric loss and improved sinterability prepared from low purity **alumina**.. Fukushima, Hideko (Hitachi Metals, Ltd., Japan). Eur. Pat. Appl. EP 1065190 A2 20010103, 17 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-113724 20000628. PRIORITY: JP 1999-183429 19990629.

AB An **alumina** ceramic compn., comprising .ltoreq.10 wt.% of MgO, and .gtoreq.0.2-10 wt.% TiO2, with an **Al2O3** phase and inevitable impurities (Na2O, ZrO2, Y2O3, Fe2O3, **SiO2**, CaO, Ga2O3 and Cr2O3) from low purity **alumina**, is described. An Al2TiO5 phase is **pptd**. in grain boundaries in which it surrounds the impurities. The **alumina** ceramic compn. exhibits a Q factor .gtoreq.850 when measured at 10 GHz. Thus, **alumina**, 0.05 wt.% magnesia and 2.0 wt.% titania powders were wet ball-milled for 20 h in **water**, after which 1 wt.% polyvinyl alc. was added to the slurries. After drying of the slurries, the granular powder was die pressed before sintering at 1500.degree.C into a ceramic body having lattice parameters a = 4.7565 .ANG. and c = 12.9884 .ANG.. D. of the sintered **doped alumina** was 3.93, with dielec. const. of 10.3 and a Q factor at 10 GHz of 2975.

IT **1344-28-1, Alumina**, processes
(ceramics; MgO-TiO2-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **12004-39-6**, Aluminum titanium oxide (Al2TiO5)
(grain boundary phase; MgO-TiO2-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

RN 12004-39-6 HCA

CN Aluminum titanium oxide (Al2TiO5) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Ti	1	7440-32-6
Al	2	7429-90-5

IT **7631-86-9, Silica**, occurrence

(impurities; MgO-TiO2-**doped alumina** ceramics
with low dielec. loss and improved sinterability prepd. from low
purity **alumina**)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IC ICM C04B035-111

CC 57-2 (Ceramics)
Section cross-reference(s): 75, 76

ST **alumina** ceramic magnesia titania **dopant** crystal
structure dielec property; aluminum titanate grain boundary phase
alumina ceramic dielec loss; impurity **alumina**
ceramic dielec loss magnesia titania **dopant**

IT Dielectric constant
Sintering
(MgO-TiO2-**doped alumina** ceramics with low
dielec. loss and improved sinterability prepd. from low purity
alumina)

IT Dielectric loss
(Q-factor; MgO-TiO2-**doped alumina** ceramics
with low dielec. loss and improved sinterability prepd. from low
purity **alumina**)

IT Ceramics
(**alumina**; MgO-TiO2-**doped alumina**
ceramics with low dielec. loss and improved sinterability prepd.
from low purity **alumina**)

IT Crystal structure
(lattice parameters; MgO-TiO2-**doped alumina**
ceramics with low dielec. loss and improved sinterability prepd.
from low purity **alumina**)

IT Molding
(press, die pressing; MgO-TiO2-**doped alumina**
ceramics with low dielec. loss and improved sinterability prepd.
from low purity **alumina**)

IT Grain boundaries
(titanate phase; MgO-TiO2-**doped alumina**
ceramics with low dielec. loss and improved sinterability prepd.
from low purity **alumina**)

IT 1309-48-4, Magnesium oxide (MgO), uses 13463-67-7, Titanium oxide
(TiO2), uses
(additive; MgO-TiO2-**doped alumina** ceramics
with low dielec. loss and improved sinterability prepd. from low
purity **alumina**)

IT **1344-28-1**, **Alumina**, processes
(ceramics; MgO-TiO2-**doped alumina** ceramics
with low dielec. loss and improved sinterability prepd. from low
purity **alumina**)

IT **12004-39-6**, Aluminum titanium oxide (Al2TiO5)
(grain boundary phase; MgO-TiO2-**doped alumina**

ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT 9002-89-5, Polyvinyl alcohol
(granulating agent; MgO-TiO2-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

IT 1305-78-8, Calcium oxide (CaO), occurrence 1308-38-9, Chromium oxide (Cr2O3), occurrence 1309-37-1, Ferric oxide, occurrence 1313-59-3, Sodium oxide Na2O, occurrence 1314-23-4, Zirconium oxide (ZrO2), occurrence 1314-36-9, Yttria, occurrence **7631-86-9**, **Silica**, occurrence 12024-21-4, Gallium sesquioxide
(impurities; MgO-TiO2-**doped alumina** ceramics with low dielec. loss and improved sinterability prepd. from low purity **alumina**)

L48 ANSWER 3 OF 15 HCA COPYRIGHT 2003 ACS

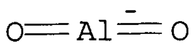
124:180439 **Aqueous** suspensions of **precipitated silica**, continuous process for their manufacture, and their uses. Prat, Evelyne; Frouin, Laurent (Rhone-Poulenc Chimie, Fr.). PCT Int. Appl. WO 9601787 A1 19960125, 34 pp. DESIGNATED STATES: W: AM, AU, BB, BG, BR, BY, CA, CN, CZ, DE, EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TT, UA, US, UZ, VN; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (French). CODEN: PIXXD2. APPLICATION: WO 1995-FR901 19950705. PRIORITY: FR 1994-8430 19940707.

AB The concn. of the suspensions is controlled at 10-40 wt.%, their viscosity is <4.10-2 Pa.s at 50/s and the amt. of SiO2 contained in the supernatant obtained after centrifugation of the suspension at 7500 rpm for 30 min is >50 wt.% (based on the SiO2 in the suspension). The suspensions are manufd. by **pptg. SiO2** from an alkali metal silicate soln. with an acid, sepg. the SiO2 to obtain a cake having solids content 10-40 wt.%, and disagglomerating the cake to obtain a low-viscosity suspension. The process is started with a heel of the alkali metal silicate. The av. particle size of agglomerates is <5 .mu.m and the disagglomeration factor is >3 mL. The suspensions are used for forming anticorrosive coatings, and prepn. of concrete, paper, and mineral-based adhesives.

IT **1302-42-7**, Sodium aluminate **1344-28-1**, Alumina, uses
(continuous pptn. process for manufg. **aq**. silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)

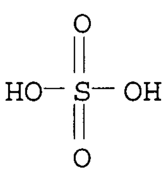
RN 1302-42-7 HCA

CN Aluminate (AlO21-), sodium (9CI) (CA INDEX NAME)

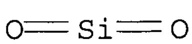


Na^+

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1344-09-8**, **Sodium silicate**
7664-93-9, **Sulfuric acid**, processes
(continuous pptn. process for manufg. **aq**. silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7631-86-9**, **Silica**, uses
(continuous **pptn**. process for manufg. **aq**. silica suspensions for use in anticorrosive coatings, concrete, paper, and mineral-based adhesives)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C01B033-141
ICS C01B033-193; C09D005-08; C04B022-06; D21H017-68
ICI C04B103-12
CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 43, 55, 58
ST **pptd silica** suspension anticorrosive coating; paper **pptd silica** suspension; concrete **pptd silica** suspension; adhesive **pptd silica** suspension
IT Adhesives
Concrete
Paper

Suspensions
(continuous pptn. process for manufg. **aq**. silica
suspensions for use in anticorrosive coatings, concrete, paper,
and mineral-based adhesives)

IT Coating materials
(anticorrosive, continuous pptn. process for manufg. **aq**
. silica suspensions for use in anticorrosive coatings, concrete,
paper, and mineral-based adhesives)

IT **1302-42-7**, Sodium aluminate **1344-28-1**, Alumina,
uses
(continuous pptn. process for manufg. **aq**. silica
suspensions for use in anticorrosive coatings, concrete, paper,
and mineral-based adhesives)

IT **1344-09-8**, **Sodium silicate**
7664-93-9, **Sulfuric acid**, processes
(continuous pptn. process for manufg. **aq**. silica
suspensions for use in anticorrosive coatings, concrete, paper,
and mineral-based adhesives)

IT **7631-86-9**, **Silica**, uses
(continuous **pptn**. process for manufg. **aq**.
silica suspensions for use in anticorrosive coatings, concrete,
paper, and mineral-based adhesives)

L48 ANSWER 4 OF 15 HCA COPYRIGHT 2003 ACS
119:282660 Effect of **silica**, sodium chloride, **alumina**
, and ferric chloride on phase change behavior of supported and
unsupported titania. Eskelinen, Pekka (Kemira Oy, Pori, 28840,
Finland). Journal of Solid State Chemistry, 106(2), 213-18
(English) 1993. CODEN: JSSCBI. ISSN: 0022-4596.

AB The anatase-rutile phase change temps. in TiO_2 powders **pptd**
. from **aq**. $TiCl_4$ and the same deposited on muscovite and
phlogopite micas were investigated. **Doping** with
Al_2O_3, NaCl, and **SiO_2** increased the phase change
temp. of supported and unsupported TiO_2, but **doping** with
$FeCl_3$ .cntdot. $6H_2O$ decreased the beginning temp. of the phase
change on unsupported TiO_2. The difference in phase change
dependence on temp. between undoped TiO_2 supported by micas and
unsupported TiO_2 was caused by diffusion of aluminum, silicon, and
sodium ions from the mica substrate during the calcination step.

IT **7429-90-5D**, Aluminum, ions, properties
(anatase-rutile transition of in relation to diffusion of, from
mica substrate)

RN 7429-90-5 HCA

CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 75-7 (Crystallography and Liquid Crystals)
Section cross-reference(s): 65

IT **7429-90-5D**, Aluminum, ions, properties 7440-21-3D,
Silicon, ions, properties 7440-23-5D, Sodium, ions, properties

(anatase-rutile transition of in relation to diffusion of, from mica substrate)

L48 ANSWER 5 OF 15 HCA COPYRIGHT 2003 ACS
119:274525 Layered silicate. Chu, Pochen; Kirker, Garry W.; Krishnamurthy, Sowmithri; Vartuli, James C. (Mobil Oil Corp., USA). U.S. US 5236681 A 19930817, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1989-443692 19891130.
AB Layered silicates such as magadiite and kenyaite are synthesized. The silica source is a fresh ppt. obtained by treating an **aq** . soln. of **sodium silicate** with **sulfuric acid**. This **silica ppt**. is not dried to reduce its activity prior to use.
IT **7631-86-9**, **Silica**, uses
(fresh **ppt**. from silicate soln., in layered silicates manuf.)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

IT **1344-28-1**, Alumina, uses
(in layered silicates manuf.)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C01B033-32
NCL 423333000
CC 49-4 (Industrial Inorganic Chemicals)
ST magadiite layered silicate manuf silica; kenyaite layered silicate manuf silica; **silica ppt** layered silicate manuf
IT Silicates, preparation
(layered, manuf. of, fresh **silica ppt**. from silicate soln. in)
IT **7631-86-9**, **Silica**, uses
(fresh **ppt**. from silicate soln., in layered silicates manuf.)
IT 1303-86-2, Boron trioxide, uses 1309-37-1, Ferric oxide, uses 1310-58-3, Potassium hydroxide, uses 1314-06-3, Nickel trioxide 1333-82-0, Chromium trioxide **1344-28-1**, Alumina, uses 12024-21-4, Gallium trioxide
(in layered silicates manuf.)
IT 12285-88-0P, Magadiite 12285-95-9P, Kenyaite
(manuf. of layered, fresh **silica ppt**. from silicate soln. in)

L48 ANSWER 6 OF 15 HCA COPYRIGHT 2003 ACS
119:206518 Manufacture of hydrated silica for filler in paper manufacture. Eimaeda, Shigeru; Suzuki, Takao; Yamaguchi, Seiichi; Yamakawa, Shigeru (Oji Paper Co, Japan). Jpn. Kokai Tokkyo Koho JP 05178606 A2 19930720 Heisei, 12 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1991-358046 19911227.

AB A Na2SO4-contg. **aq. Na silicate** soln. is mixed with H2SO4 to 35-45% of the neutralization and to contain SiO2 6.0-8.0 and Na2SO4 3.5-4.1 g/100 mL, heated at 85-95.degree. under stirring, and neutralized with H2SO4 to **ppt**. hydrated **SiO2** that is filtered, dispersed in **water** , and powd. and/or classified to av. particle size 3-10 .mu.m. The hydrated SiO2 is used as filler in the manuf. of paper to increase whiteness and opacity.

No doping

IT **1344-09-8**, **Sodium silicate**
(neutralization of **aq.**, for hydrated silica, for filler in paper manuf.)

RN 1344-09-8 HCA

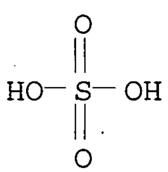
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-93-9**, **Sulfuric acid**, uses
(neutralization with, of **aq. sodium silicate** solns., for hydrated silica manuf. for filler in paper manuf.)

RN 7664-93-9 HCA

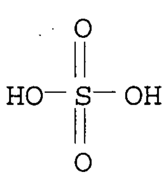
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **10043-01-3**, Aluminum sulfate
(solns. contg., in hydrated silica manuf. from **aq. sodium silicate**, for filler in paper manuf.)

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



●2/3 Al

IC ICM C01B033-142
ICS D21H017-67

CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 43

IT Paper

(fillers for, hydrated silica manuf. for, from **aq.**
sodium silicate)

IT Filling materials
(hydrated silica manuf. for, from **aq. sodium**
silicate, for paper manuf.)

IT Silica gel, preparation
(manuf. of, from **aq. sodium silicate**
, for filler in paper manuf.)

IT **1344-09-8**, **Sodium silicate**
(neutralization of **aq.**, for hydrated silica, for filler
in paper manuf.)

IT **7664-93-9**, **Sulfuric acid**, uses
(neutralization with, of **aq. sodium**
silicate solns., for hydrated silica manuf. for filler in
paper manuf.)

IT 7757-82-6, Sodium sulfate, uses
(**sodium silicate** solns. contg.,
neutralization of, in hydrated silica manuf. for filler in paper
manuf.)

IT **10043-01-3**, Aluminum sulfate
(solns. contg., in hydrated silica manuf. from **aq.**
sodium silicate, for filler in paper manuf.)

L48 ANSWER ~~7 OF~~ 15 HCA COPYRIGHT 2003 ACS

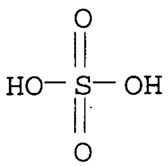
119:30997 Zeolite production from DSP in red mud feedstock. Roach, G. I. D.; Cardile, C. M. (Kwinana Refinery, Alcoa of Australia, 6167, Australia). Light Metals (Warrendale, PA, United States) 51-7 (English) 1993. CODEN: LMPMDF. ISSN: 0147-0809.

AB In the Bayer process a sodium aluminosilicate desilication product (DSP) is formed which is contained in the mud residue and ppts. as scale on plant equipment. The DSP can be dissolved in acid and the subsequent liquor neutralized to produce an alternative sodium aluminosilicate, zeolite type 4A, which has a com. market such as in detergent manuf. Aspects of this conversion process are reported. The rate of dissoln. of DSP in acid is so fast that the rate is invariably controlled by mass transfer considerations. The resulting acidic liquor is sufficiently stable for the leached residue mud to be sepd. without **pptn**. and gelation of **silica**. The purity of the type 4A zeolite produced form the acid liquor is affected by the soda:alumina:silica:**water** ratio, the mixing temp. of the acid liquor and caustic, and the crystn. temp. Conditions for optimum prodn. of type 4A zeolite from DSP are given. **Sulfuric acid** can be used in the conversion process. Spent cleaning acid used in DSP scale removal provides an extra source of acid and DSP. Iron is dissolved from residue mud which leads to coloration of the final product.

IT **7664-93-9P**, **Sulfuric acid**, preparation
(conversion by, of sodium aluminosilicate desilication product
formed in red mud and in scale on alumina manufg. equipment, 4A
type zeolite manuf. by)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



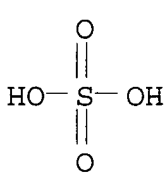
IT **1344-00-9**, Sodium aluminosilicate
(desilication product, in red mud and in scale on alumina manuf. equipment, **sulfuric acid** conversion of, 4A type zeolite manuf. by)
RN 1344-00-9 HCA
CN Silicic acid, aluminum sodium salt (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Na	x	7440-23-5
Al	x	7429-90-5
Unspecified	x	1343-98-2

IT **1344-28-1P**, Alumina, preparation
(manuf. of, scale on equipment for, sodium aluminosilicate desilication product in, **sulfuric acid** conversion of, for 4A-type zeolite)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 49-4 (Industrial Inorganic Chemicals)
Section cross-reference(s): 54
ST Bayer process desilication product zeolite manuf; red mud sodium aluminosilicate conversion zeolite; **sulfuric acid** conversion red mud zeolite
IT Scale (coating)
(on alumina manufg. equipment, sodium aluminosilicate desilication product in, **sulfuric acid** conversion of, for 4A-type zeolite)
IT Red mud (Bayer process residue)
(sodium aluminosilicate desilication product in, **sulfuric acid** conversion of, 4A type zeolite manuf. by)
IT Zeolites, preparation
(4A, manuf. of, by **sulfuric acid** conversion of sodium aluminosilicate desilication product in red mud or in scale on alumina manufg. equipment)
IT **7664-93-9P**, **Sulfuric acid**, preparation
(conversion by, of sodium aluminosilicate desilication product formed in red mud and in scale on alumina manufg. equipment, 4A type zeolite manuf. by)
IT **1344-00-9**, Sodium aluminosilicate
(desilication product, in red mud and in scale on alumina manuf. equipment, **sulfuric acid** conversion of, 4A

type zeolite manuf. by)
IT **1344-28-1P**, Alumina, preparation
(manuf. of, scale on equipment for, sodium aluminosilicate desilication product in, **sulfuric acid** conversion of, for 4A-type zeolite)

L48 ANSWER 8 OF 15 HCA COPYRIGHT 2003 ACS
115:11764 Filler for resin-containing potting compositions and manufacture. Mochizuki, Tadashi; Iwata, Hideo (Nippon Kokan K. K., Japan). Jpn. Kokai Tokkyo Koho JP 03050113 A2 19910304 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-185763 19890718.
AB The filler is amorphous synthetic **silica** (without **pptn**. of crystals) having coeff. of moisture absorption <0.1 wt.%, and contg. impurities U and Th <0.1 ppb (wt.) resp., and Fe, Al, Ti, Na and K <1 ppm (wt.) resp. The filler is manufd. by reacting alkali metal silicate (e.g., Na- or K-silicate) .ltoreq.5 (as SiO2) and mineral acid (e.g., H2SO4) .gtoreq.15 wt.% to form synthetic silica (wet process), and sintering under following conditions: T .gtoreq. 1200 (1) T + 5t .gtoreq. 1350 (2) 12 T + 5t .ltoreq. 15900 (3) t .ltoreq. 180 (4) where T(.degree.C) is sintering temp., and t(min) is sintering time. The filler is used in potting compns. for integrated circuits, etc.
IT **1344-09-8**, **Sodium silicate**
(amorphous silica manuf. from mineral acid and, as filler, for resin-contg. potting compns.)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-93-9**, **Sulfuric acid**, uses and miscellaneous
(amorphous silica manuf. from **sodium silicate** and, as filler, for resin-contg. potting compns.)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7732-18-5**
(hygroscopicity, of amorphous silica, in resin-contg. potting compns.)
RN 7732-18-5 HCA
CN Water (8CI, 9CI) (CA INDEX NAME)

H_2O

IT **7429-90-5**, Aluminum, uses and miscellaneous
(impurity, in filler, for resin-contg. potting compns.)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

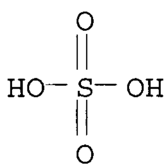
IC ICM C01B033-18
ICS C08K003-36; C08L063-00
CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76
IT 1312-76-1, Potassium silicate **1344-09-8**, **Sodium silicate**
(amorphous silica manuf. from mineral acid and, as filler, for resin-contg. potting compns.)
IT **7664-93-9**, **Sulfuric acid**, uses and miscellaneous 7697-37-2, Nitric acid, uses and miscellaneous
(amorphous silica manuf. from **sodium silicate** and, as filler, for resin-contg. potting compns.)
IT **7732-18-5**
(hygroscopicity, of amorphous silica, in resin-contg. potting compns.)
IT **7429-90-5**, Aluminum, uses and miscellaneous 7439-89-6, Iron, uses and miscellaneous 7440-23-5, Sodium, uses and miscellaneous 7440-29-1, Thorium, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous 7440-61-1, Uranium, uses and miscellaneous
(impurity, in filler, for resin-contg. potting compns.)

L48 ANSWER 9 OF 15 HCA COPYRIGHT 2003 ACS
112:182381 Manufacture of high-purity silica. Seki, Akira; Narita, Yuuki; Nagata, Shunro (Kawatetsu Mining Co., Ltd., Japan). Ger. Offen. DE 3830777 A1 19900315, 5 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1988-3830777 19880909.
AB The SiO2, having total impurity content .ltoreq.5 ppm, is manufd. by adding an **aq**. alkali metal silicate soln. whose viscosity has been adjusted to 10-10,000 P, directly to a mineral acid soln. to dissolve the impurities and to form a **SiO2 ppt**. that is washed with mineral acid. The high-purity SiO2 is esp. useful for optical and electronic applications. **Water** glass (3330 g; SiO2 29.5, Na2O 9.8 wt.%) was concd. to 32 wt.% SiO2 and viscosity .apprx.100 P at 32.degree., and added to 10 L 21.7 wt.% HNO3 contg. 50 g 35 wt.% H2O2 to give SiO2 that was washed with pure **water**, reslurried in an **aq**. HNO3-H2O2-EDTA soln., filtered, dried, and sintered at 1100.degree. for 2 h to give SiO2 contg. Al 1.1, Fe 0.2, Ti 0.5, and K, Ca, Mg, U, and Th .ltoreq.0.1 (each), and Na .ltoreq.1.0 ppm, vs. 1100, 130, 160, 100, 100, 100, 102, and 220 ppm, resp. for the **water** glass.
IT **7429-90-5**, Aluminum, uses and miscellaneous
(impurities, dissoln. of, in mineral acid-hydrogen peroxide, in **silica pptn**. from alkali metal silicate solns.,

for high-purity silica)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT **7664-93-9**, **Sulfuric acid**, reactions
(**pptn**. with, of **silica**, from alkali metal
silicate solns., in high-purity silica prepn.)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**, **Water** glass
(reaction of, with mineral acid-hydrogen peroxide solns., for
impurity dissoln. and high-purity silica, viscosity control in)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C01B033-18
CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 57
ST **water** glass mineral acid silica; impurity removal
silica pptn; nitric acid **water** glass
silica; **sulfuric acid water** glass
silica; hydrogen peroxide acid silica
IT Acids, reactions
(inorg., **pptn**. with, of **silica**, from alkali
metal silicate solns., in high-purity silica prepn.)
IT **7429-90-5**, Aluminum, uses and miscellaneous 7439-89-6,
Iron, uses and miscellaneous 7439-95-4, Magnesium, uses and
miscellaneous 7440-09-7, Potassium, uses and miscellaneous
7440-29-1, Thorium, uses and miscellaneous 7440-32-6, Titanium,
uses and miscellaneous 7440-61-1, Uranium, uses and miscellaneous
7440-70-2, Calcium, uses and miscellaneous
(impurities, dissoln. of, in mineral acid-hydrogen peroxide, in
silica pptn. from alkali metal silicate solns.,
for high-purity silica)
IT 60-00-4P, EDTA, uses and miscellaneous
(mineral acids contg. hydrogen peroxide and, **pptd**.
silica washing with, in high-purity silica prepn. from
alkali metal silicate solns.)
IT **7664-93-9**, **Sulfuric acid**, reactions
7697-37-2, Nitric acid, reactions
(**pptn**. with, of **silica**, from alkali metal

silicate solns., in high-purity silica prepn.)
IT 7631-86-9P, Silica, preparation
(prepn. of high-purity, from **aq**. alkali metal silicate solns., by pptn. with mineral acid)
IT **1344-09-8**, **Water** glass
(reaction of, with mineral acid-hydrogen peroxide solns., for impurity dissoln. and high-purity silica, viscosity control in)

L48 ANSWER 10 OF 15 HCA COPYRIGHT 2003 ACS
112:87470 Applications of a high spatial resolution combined AES/SIMS instrument. Bishop, H. E.; Moon, D. P.; Marriott, P.; Chalker, P. R. (Mater. Dev. Div., Harwell Lab., Oxon, OX11 0RA, UK). Vacuum, 39(10), 929-39 (English) 1989. CODEN: VACUAV. ISSN: 0042-207X.
AB An Auger microprobe (MA 500, VG Scientific Ltd) was fitted with a 30 keV field-emission gallium ion gun and quadrupole mass spectrometer. The resulting instrument has a secondary electron imaging capability of 50 nm for both primary electron and ion beams. A wide range of materials problems was studied demonstrating the value of 2 complementary high spatial resoln. techniques available on the same instrument. Examples are given of its use in the fields of corrosion, fracture of composite materials, microelectronics and biol. science.
IT **7429-90-5**, Aluminum, properties
(Auger-secondary ion mass spectral combined studies of)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT **7631-86-9**, **Silicon dioxide**, properties
(Auger-secondary ion mass spectral combined studies of composite materials contg.)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT **12003-81-5**
(Auger-secondary ion mass spectral studies of)
RN 12003-81-5 HCA
CN Aluminum, compd. with nickel (1:3) (6CI, 8CI, 9CI) (CA INDEX NAME)

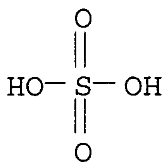
Component	Ratio	Component Registry Number
Ni	3	7440-02-0
Al	1	7429-90-5

IT **1344-28-1**, **Aluminum oxide**, properties
(Auger-secondary ion mass spectral study of **ppts**. of,

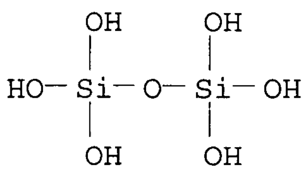
in nickel matrixes)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 73-8 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT 7440-42-8, Boron, properties
(Auger-secondary ion mass spectra studies of nickel **aluminum doped** with)
IT 57-12-5, Cyanide, properties **7429-90-5**, Aluminum, properties 7440-32-6, Titanium, properties 7440-55-3, Gallium, properties 14067-07-3, Silicon(1+), properties 14594-80-0, Boron(1+), properties 15721-70-7, Uranium(1+), properties 17341-25-2, Sodium(1+), properties
(Auger-secondary ion mass spectral combined studies of)
IT 409-21-2, Silicon carbide, properties 7440-21-3, Silicon, properties 7440-23-5, Sodium, properties **7631-86-9**, **Silicon dioxide**, properties
(Auger-secondary ion mass spectral combined studies of composite materials contg.)
IT 1306-38-3, Cerium dioxide, properties 1313-99-1, Nickel monoxide, properties 7440-02-0, Nickel, properties 7440-45-1, Cerium, properties **12003-81-5** 12597-68-1, Stainless steel, properties 125239-92-1, Nickel monoxide-18O
(Auger-secondary ion mass spectral studies of)
IT 7440-48-4, Cobalt, properties
(Auger-secondary ion mass spectral studies of, in oxide scales formed in **water** loops)
IT **1344-28-1**, **Aluminum oxide**, properties
(Auger-secondary ion mass spectral study of **ppts**. of, in nickel matrixes)

L48 ANSWER 11 OF 15 HCA COPYRIGHT 2003 ACS
107:61505 Manufacture of hydrophobic silica fines. Takei, Hiroharu; Oyama, Toshikazu; Fukatsu, Yasuo; Maeno, Masahiro (Mitsubishi Mining and Cement Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62108727 A2 19870520 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-249844 19851107.
AB Silicate raw material is acid-treated to **ppt. SiO2** hydrogel, then treated with silane coupling agent, cured at high temp. and high pressure, and quenched to give hydrophobic SiO2 fines which are useful as sedimentation-preventing agents in paint ink or natural rubber. Thus, **Na silicate** contg. 15% SiO2 ws mixed with 25% H2SO4 at wt. ratio 1:0.67, then cleaned with **H2O** to form SiO2 hydrogel, and mixed with an **aq**. soln. of methoxysilane coupling agent. The resulting soln. was kept for 1 night, filtered, the gel was heated at 230.degree. for 1 h in an autoclave before the steam was released, and quenched to yield hydrophobic SiO2 fines.
IT **7664-93-9**, **Sulfuric acid**, reactions
(reaction of, with **sodium silicate**, for forming silica hydrogel for prepn. of hydrophobic silica fines)

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **12068-50-7**, Halloysite
(reaction of, with **sulfuric acid** in manuf. of
hydrophobic silica fines)
RN 12068-50-7 HCA
CN Halloysite (Al2(Si2O7).2H2O) (9CI) (CA INDEX NAME)



2 Al

2 H_2O

IT **1344-09-8**, **Sodium silicate**
(reaction of, with **sulfuric acid**, for forming
silica hydrogel for prepn. of hydrophobic silica fines)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C01B033-157
CC 49-3 (Industrial Inorganic Chemicals)
ST **sodium silicate** silica fines prepn
IT Clays, reactions
(reaction of, with **sulfuric acid** in manuf. of
hydrophobic silica fines)
IT **7664-93-9**, **Sulfuric acid**, reactions
(reaction of, with **sodium silicate**, for
forming silica hydrogel for prepn. of hydrophobic silica fines)
IT **12068-50-7**, Halloysite
(reaction of, with **sulfuric acid** in manuf. of
hydrophobic silica fines)
IT **1344-09-8**, **Sodium silicate**

(reaction of, with **sulfuric acid**, for forming silica hydrogel for prepn. of hydrophobic silica fines)

L48 ANSWER 12 OF 15 HCA COPYRIGHT 2003 ACS
97:201750 Manufacturing of magnetic ~~powder.~~ (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57116707 A2 19820720 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-2313 19810110.
AB Magnetic powder is manufd. by coating powd. Fe compds. (goethite, Fe2O3, Fe3O4, etc.) with an Al compd. and a Si compd., heating at 200-500.degree., dewatering (e.g., pressurized filtration), and reducing in H. Thus, a strongly alk. soln. contg. a dispersion of goethite particles was mixed with **aq.** Al2(SO4)3, and sparged with CO2 to adjust pH .ltoreq.10, to **ppt.** hydrated **Al2O3** on the particles. These particles were cleaned, and heated at 300.degree. to convert the hydrated **Al2O3** to **Al2O3**. A similar process was applied to coat with **SiO2**. The coated particles were sepd. from an **aq.** medium by pressurized filtration, and then were reduced in H at 500.degree. to a powd. product with good magnetic properties.
IT **7429-90-5**, uses and miscellaneous
(**doping** with silicon and, in magnetic powder manuf.)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

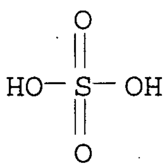
Al

IC B22F009-20
ICA H01F001-06
CC 55-4 (Ferrous Metals and Alloys)
Section cross-reference(s): 77
ST magnetic iron powder manuf goethite; **aluminum doping** magnetic powder manuf; silicon **doping** magnetic powder manuf
IT 7439-89-6P, preparation
(**aluminum**-silicon **doped** magnetic powder, manuf. of, from goethite)
IT 7440-21-3, uses and miscellaneous
(**doping** with **aluminum** and, in magnetic powder manuf.)
IT **7429-90-5**, uses and miscellaneous
(**doping** with silicon and, in magnetic powder manuf.)
IT 1309-37-1, uses and miscellaneous 1309-38-2, uses and miscellaneous 1310-14-1
(iron powder from, **aluminum**-silicon **doped** magnetic, manuf. of)

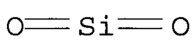
L48 ANSWER 13 OF 15 HCA COPYRIGHT 2003 ACS
86:74535 Coating compositions containing **precipitated silica**. Wason, Satish K. (Huber, J. M., Corp., USA). U.S. US 3993497 19761123, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1975-549637 19750213.

AB **Na silicate** (I) solns. were treated with controlled addn. of H2SO4 and Al sulfate (II) solns. to **ppt** . **SiO2** having high **H2O** holding ability, oil absorption and surface area useful as flatting agents for paints. Thus, a mixt. of 100 parts 11.7% H2SO4 and 7 parts II (1.4 lb./gal.) was added to 10 gal. I at 165.degree.F and at a rate of 300 mL/min to give SiO2 with 88% moisture, 240 cm3/100 g oil absorption and 250 m2/g surface area. Applying nitrocellulose lacquor contg. 10% SiO2 on glass gave a specimen with 8 (60%) gloss and 28 (85%) sheen.

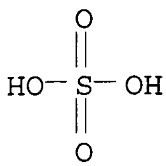
IT **7664-93-9**, uses and miscellaneous
(aluminum sulfate contg., **pptn**.. with, of **silica** from **sodium silicate**)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7631-86-9**, uses and miscellaneous
(**pptd**., as flatting agents for paints)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**
(**silica pptn**. from, with **sulfuric acid** contg., aluminum sulfate)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **10043-01-3**
(**sulfuric acid** contg., **pptn**. with, of **silica** from **sodium silicate**)
RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



●2/3 Al

IC C09C001-30
NCL 106288000B
CC 42-5 (Coatings, Inks, and Related Products)
ST **pptd silica** flatting agent; **sulfuric acid** sulica pptn; aluminum sulfate **silica pptn**; coating compn **pptd silica**
IT Coating materials
(nitrocellulose contg., **pptd**. **silica** on glass)
IT **7664-93-9**, uses and miscellaneous
(aluminum sulfate contg., **pptn**. with, of **silica** from **sodium silicate**)
IT **7631-86-9**, uses and miscellaneous
(**pptd**., as flatting agents for paints)
IT **1344-09-8**
(**silica pptn**. from, with **sulfuric acid** contg., aluminum sulfate)
IT **10043-01-3**
(**sulfuric acid** contg., **pptn**. with, of **silica** from **sodium silicate**)

L48 ANSWER 14 OF 15 HCA COPYRIGHT 2003 ACS
77:78853 Viscosity of fused **silica doped** with **alumina**. Whitworth, C. R.; Bunnell, L.; Brown, Sherman Daniel (Univ. Utah, Salt Lake City, UT, USA). Front. Glass Sci. Technol., Proc. Annu. Meet. Int. Comm. Glass, Meeting Date 1969, 87-92. Editor(s): Bateson, S. Int. Comm. Glass: Sheffield, Engl. (English) 1970. CODEN: 25JGAS.
AB Two com. natural fused **SiO2** and one synthetic **SiO2** were used in the study. These were **doped** with 0-5.22 wt. % **Al2O3** by **pptg**. Al quinolate onto a slurry of powd. quartz followed by melting at 1800-1900.degree. in vacuum for 30 min. Infrared measurements showed no **H2O** in the bulk glasses. The **Al2O3** content was detd. together with d. for each specimen. Fibers were pulled from the bulk glasses 10 in. long and 1 mm diam. X-ray, petrographic, and electron probe anal. showed no crystallinity and good distribution of **Al2O3**. Dynamic viscosity (.eta.) detns. were made by a traction technique at 1139, 1239, and 1340.degree. in air, H, and N atms. All samples behaved

similarly showing a peak in .eta. at .apprx.0.5 wt. % **Al2O3**
. H was found to lower .eta. relative to N but .eta. was
unexpectedly low for samples in air being below the results for H.
Initially .eta. rises on **Al2O3** addn. because impurities in
the **SiO2** act to make some of the O nonbridging and the
addn. of Al3+ increases the amount of bridging. The Al3+ replaces
Si4+ in tetrahedral sites and the impurities act to compensate the
resultant neg. charge. When the amt. of Al3+ exceeds that for which
impurities can compensate, further Al3+ introduces O vacancies which
bring about a decrease in .eta..

IT **7631-86-9**, vitreous
(viscosity of **aluminum oxide-doped**)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT **1344-28-1**, properties
(viscosity of fused **silica doped** with)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 57-1 (Ceramics)
Section cross-reference(s): 65

ST. **silica** glass **alumina doped**; viscosity
glass **alumina**

IT Glass fibers
(**aluminum oxide-doped**
silica)

IT **7631-86-9**, vitreous
(viscosity of **aluminum oxide-doped**)

IT **1344-28-1**, properties
(viscosity of fused **silica doped** with)

L48 ANSWER 15 OF 15 HCA COPYRIGHT 2003 ACS

63:76515 Original Reference No. 63:14093e-f Adsorption characteristics
of rutile samples modified with aluminum, silicon, and zinc oxides.
Isirikyan, A. A.; Ushakova, E. V. (State Univ., Moscow).
Lakokrasochnye Materialy i Ikh Primenenie (3), 18-21 (Russian) 1965.
CODEN: LAMAAD. ISSN: 0130-9013.

AB cf. CA 61, 3720c. Rutile prepd. from the ilmenite concentrates of
the different areas was modified with **Al2O3**, **SiO2**
, and ZnO by the 2 following methods: (a) an **aq**.
suspension of TiO2 was treated with Na aluminate, then the
water-glass soln. was added; subsequently the suspension was
satd. with CO2. On the surface of TiO2 the aluminosilicate
ppt. contained 2% **Al2O3** and 0.8% **SiO2**
(based on the wt. of the pigment); (b) the mixt. of the oxides was
pptd. with Na2CO3 soln. to pH = 4 and further with NaOH to
pH = 7 from the mixt. of Al and Zn sulfates and **water**
glass to give a coating of the oxides on the surface of pigment

```
     contg. Al2O3 2, SiO2 0.8, and ZnO 0.3%.  The
     adsorption isotherms of N, Ar, C6H6, cyclohexene, and MeOH vapors on
     initial and modified samples of TiO2, and on a control
     aluminosilicate sample were measured.  The doping of TiO2
     with Al2O3 and SiO2 (2-3%) changes the surface
     chemistry of TiO2 substantially.  The surface of rutile modified in
     the above-mentioned manner behaves as the aluminosilicate.
IT   1344-28-1, Aluminum oxide
     7631-86-9, Silica
        (rutile and TiO2 contg., adsorption by)
RN   1344-28-1  HCA
CN   Aluminum oxide (Al2O3) (8CI, 9CI)  (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN   7631-86-9  HCA
CN   Silica (6CI, 7CI, 8CI, 9CI)  (CA INDEX NAME)

O==Si==O

CC   4 (Surface Chemistry and Colloids)
IT   Adsorption
        (by rutile and TiO2, contg. Al2O3, SiO2 or
        ZnO)
IT   1317-80-2, Rutile   13463-67-7, Titanium oxide, TiO2
        (adsorption by, contg. Al2O3, SiO2 or ZnO)
IT   110-83-8, Cyclohexene
        (adsorption of, by rutile or TiO2 contg. Al2O3,
        SiO2 or ZnO)
IT   67-56-1, Methanol   71-43-2, Benzene   7440-37-1, Argon   7727-37-9,
     Nitrogen
        (adsorption of, by rutile or TiO2, contg. Al2O3,
        SiO2 or ZnO)
IT   1314-13-2, Zinc oxide 1344-28-1, Aluminum
     oxide 7631-86-9, Silica
        (rutile and TiO2 contg., adsorption by)


=> d l49 1-16 ti

L49  ANSWER 1 OF 16  HCA  COPYRIGHT 2003 ACS
TI   Role of liquid phase in PTCR characteristics of (Ba0.7Sr0.3)TiO3
     ceramics

L49  ANSWER 2 OF 16  HCA  COPYRIGHT 2003 ACS
TI   Cation segregation in an oxide ceramic with low solubility: yttrium
     doped .alpha.-alumina

L49  ANSWER 3 OF 16  HCA  COPYRIGHT 2003 ACS
TI   Dopants for synthesis of stable bimodally porous titania

L49  ANSWER 4 OF 16  HCA  COPYRIGHT 2003 ACS
TI   Densification and microstructure of refractory periclase grains
```

L49 ANSWER 5 OF 16 HCA COPYRIGHT 2003 ACS
TI Grain-growth inhibition in Na2O-**doped** TiO2-excess barium titanate ceramic

L49 ANSWER 6 OF 16 HCA COPYRIGHT 2003 ACS
TI New UO2 fuel studies

L49 ANSWER 7 OF 16 HCA COPYRIGHT 2003 ACS
TI Effective catalysts for direct cracking of methane to produce hydrogen and filamentous carbon. Part I. Nickel catalysts

L49 ANSWER 8 OF 16 HCA COPYRIGHT 2003 ACS
TI Silver aggregates in photoluminescent phosphate glasses of the 'Ag2O-ZnO-P2O5' system

L49 ANSWER 9 OF 16 HCA COPYRIGHT 2003 ACS
TI Densification and microstructure of refractory periclase grains

L49 ANSWER 10 OF 16 HCA COPYRIGHT 2003 ACS
TI Crystallization of a glassy phase from high-**alumina** ceramics with CuO and B2O3 additives

L49 ANSWER 11 OF 16 HCA COPYRIGHT 2003 ACS
TI Manufacture of compositions based on mixed oxides of cerium and zirconium, the compositions obtained and their use in the manufacture of catalysts and catalyst supports, and the monolithic catalysts obtained and their use

L49 ANSWER 12 OF 16 HCA COPYRIGHT 2003 ACS
TI Devitrification inhibitor in binary borosilicate glass composite

L49 ANSWER 13 OF 16 HCA COPYRIGHT 2003 ACS
TI Method for adding oxide additives to **silica** soot

L49 ANSWER 14 OF 16 HCA COPYRIGHT 2003 ACS
TI Formation of crystalline fine particles from amorphous solid phase and its application

L49 ANSWER 15 OF 16 HCA COPYRIGHT 2003 ACS
TI Electrical activity of aluminum implanted in silicon: an interface problem in high-power devices

L49 ANSWER 16 OF 16 HCA COPYRIGHT 2003 ACS
TI Producing **doped** tungsten powders by chemical deposition

=> d l49 13,14,15 cbib abs hitstr hitind

L49 ANSWER 13 OF 16 HCA COPYRIGHT 2003 ACS
115:97837 Method for adding oxide additives to **silica** soot.
Kogo, Takashi; Ishiguro, Yoichi; Oga, Yuichi (Sumitomo Electric

Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03050129 A2
19910304 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1989-182615 19890717.

AB The method comprises dipping a soot of **SiO2** or mixt.
contg. **SiO2** and other oxide(s) into a soln. contg. solvent
and an oxide additive (e.g., **Al2O3**) or a compd. (e.g.,
AlCl3), which is converted to oxide additive as solute, changing
temp. until surpassing satd. concn. of the solute for **pptg**
. part or most of the solute and adhering the solute on the external
surface and in the internal pores of the soot.

IT **1344-28-1**, **Aluminum oxide** (**Al2O3**
), uses and miscellaneous
(additive, adding of, to **silica** soot, in manuf. of
aluminum-doped glass)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7631-86-9**, **Silica**, uses and miscellaneous
(soot, adding oxide additives to, in manuf. of **doped**
glass)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

IC ICM C03B020-00

CC 57-1 (Ceramics)

ST oxide additive addn **silica** soot

IT **1344-28-1**, **Aluminum oxide** (**Al2O3**
), uses and miscellaneous
(additive, adding of, to **silica** soot, in manuf. of
aluminum-doped glass)

IT 7446-70-0, Aluminum chloride (AlCl3), uses and miscellaneous
(additive, adding of, to **silica**, in manuf. of
aluminum-doped glass)

IT **7631-86-9**, **Silica**, uses and miscellaneous
(soot, adding oxide additives to, in manuf. of **doped**
glass)

L49 ANSWER 14 OF 16 HCA COPYRIGHT 2003 ACS

113:176669 Formation of crystalline fine particles from amorphous solid
phase and its application. Kokubo, Tadashi (Inst. Chem. Res., Kyoto
Univ., Uji, 611, Japan). Funsai (34), 117-22 (Japanese) 1990.
CODEN: FUNSAA. ISSN: 0429-9051.

AB A review, with 9 refs., of the principle, theory, and
characteristics of formation of cryst. fine particles from amorphous
solid materials and its' applications. Prepn. of red glass colored
with colloidal Au, photosensitive glass of Ce3+ and Au+
doped Li2O-**SiO2** system, photochromic glass of AgCl
doped Na2O-**Al2O3**-B2O3-**SiO2** system,
heat-resisting glass ceramics of TiO2- and ZrO2-**doped**

Li2O-**Al2O3**-**SiO2** system, glass ceramics for
dental, artificial bone, and structural use, e.g., MgO-CaO-TiO2-
SiO2-P2O5, CaO-**Al2O3**-**SiO2** systems, etc.,
and Ba ferrite are presented.
CC 57-0 (Ceramics)
ST review glass ceramic coloring; oxide glass coloring review; cryst.
particle **pptn** glass review
IT Glass ceramics
Glass, oxide
(coloring of, by cryst. particle **pptn**)
IT Coloring
(of oxide glass and glass ceramics by cryst. particle
pptn.)

L49 ANSWER 15 OF 16 HCA COPYRIGHT 2003 ACS
113:163384 Electrical activity of aluminum implanted in silicon: an
interface problem in high-power devices. Bruesch, P.; Halder, E.;
Kluge, P.; Rhyner, J.; Roggwiller, P.; Stockmeier, T.; Stucki, F.;
Wiesmann, H. J. (ABB Corp. Res., Baden, CH-5405, Switz.). Journal
of Applied Physics, 68(5), 2226-34 (English) 1990. CODEN: JAPIAU.
ISSN: 0021-8979.
AB States of aluminum implanted into silicon before and after annealing
were studied by spreading resistance, secondary-ion mass
spectroscopy, transmission electron microscopy, and
energy-dispersive x-ray techniques. The case study presented here
[Czochralski grown (100) Si, implanted dose 3 .times. 1015 cm-2,
junction depth 6 .mu.m] reveals that the major source for the loss
of the elec. activity is out-diffusion, i.e., segregation into the
native **Si oxide** layer and/or evapn. into the
vacuum. In addn., the activity is reduced by the formation of
Al oxide ppts. The results are
discussed in the light of optical studies on the same materials
performed previously as well as on the basis of a diffusion model
which allows for out-diffusion. The large rate const. for
out-diffusion indicates that the native oxide layer represents a
highly reactive surface for Al. From the diffusion model it is
possible to calc. an approx. elec. activity ~A(xj) as a function of
junction depth xj, which qual. reproduces well the obsd. activity
A(xj). This demonstrates that the case study is representative for
a large no. of samples which were implanted and annealed under
widely different conditions. Some tech. processes which could
possibly enhance the elec. activity are discussed.
IT **1344-28-1P**, Aluminum sesquioxide, preparation
(formation of, during aluminum implantation in silicon, elec.
activity in relation to)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 76-1 (Electric Phenomena)
IT 7723-14-0, Phosphorus, properties
(elec. activity of **aluminum** implanted in silicon
doped with)

IT **1344-28-1P**, Aluminum sesquioxide, preparation 11126-22-0P,
Silicon oxide
(formation of, during aluminum implantation in silicon, elec.
activity in relation to)

=> d his 150-

FILE 'HCA' ENTERED AT 10:31:23 ON 18 JUN 2003

L50	3415	S	(ALUMINUM# OR AL)(3A)IMPLANT?
L51	924	S	L8(3A)IMPLANT?
L52	356	S	(L50 OR L51) AND L7
L53	15	S	L52 AND L32
L54	14	S	L53 NOT (L47 OR L48)
L55	5	S	L54 AND L9
L56	9	S	L54 NOT L55

=> d 155 1-5 cbib abs hitstr hitind

L55 ANSWER 1 OF 5 HCA COPYRIGHT 2003 ACS
132:159398 Aluminum redistribution into **SiO2**/Si system during
oxidation of high dose **Al-implanted** silicon.
Iacona, Fabio; Raineri, Vito; La Via, Francesco; Gasparotto, Andrea;
Cali, Denise; Rimini, Emanuele (CNR-IMETEM, Catania, 95121, Italy).
Ion Implantation Technology--98, International Conference on Ion
Implantation Technology Proceedings, 12th, Kyoto, June 22-26, 1998,
Meeting Date 1998, Volume 1, 134-137. Editor(s): Matsuo, Jiro;
Takaoka, G.; Yamada, Isao. Institute of Electrical and Electronics
Engineers: New York, N. Y. (English) 1999. CODEN: 68NKAN.

AB The distribution during wet oxidn. at 920.degree. of **Al**
implanted in Si at 35 keV and 3 .times. 1015/cm2 fluence has
been investigated. About 40% of the fluence is lost just after the
first stage of the thermal process; another 40-50% is distributed
inside the growing oxide at a concn. of about 1020/cm3. A relevant
fraction of the remaining Al atoms segregates inside highly
defective zones. In addn., small **ppts**. were detected by
TEM in the oxide layer. The inclusion of these **ppts**. in
the **SiO2** layer is the reason for the formation of very
rough oxide surfaces.

IT **7631-86-9**, **Silica**, uses
(aluminum redistribution into **SiO2**/Si system during
oxidn. of high dose **Al-implanted** silicon)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 76-2 (Electric Phenomena)
ST aluminum redistribution **silica** silicon system oxidn
IT Oxidation

(aluminum redistribution into **SiO2**/Si system during oxidn. of high dose **Al-implanted** silicon)

IT 7440-21-3, Silicon, uses **7631-86-9**, **Silica**, uses
(aluminum redistribution into **SiO2**/Si system during oxidn. of high dose **Al-implanted** silicon)

IT 7429-90-5, Aluminum, processes
(aluminum redistribution into **SiO2**/Si system during oxidn. of high dose **Al-implanted** silicon)

L55 ANSWER 2 OF 5 HCA ~~COPYRIGHT~~ 2003 ACS

124:64045 Effects of implantation temperature on the structure, composition and oxidation resistance of SiC. Yang, Zunde; Du, Honghua; LIbera, Matthew; Singer, Irwin L. (Dep. Materials Science Eng., Stevens Inst. Technology, Hoboken, NJ, 07030, USA). Materials Research Society Symposium Proceedings, 354(Beam-Solid Interactions for Materials Synthesis and Characterization), 281-6 (English) 1995. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

AB .alpha.-SiC crystals were **implanted** with **aluminum** to a high dose at room temp. or 800.degree.C. Studies by transmission electron microscopy showed that SiC was amorphized by room temp. implantation but remained cryst. at 800.degree.C. Cryst. aluminum carbide was formed and aluminum redistribution took place in SiC implanted at 800.degree.C. Implanted and unimplanted crystals were oxidized in 1 atm flowing oxygen at 1300.degree.C. Amorphization led to accelerated oxidn. of SiC. The oxidn. resistance of SiC implanted at 800.degree.C was comparable to that of pure SiC. The oxidn. layers formed on SiC implanted at both temps. consisted of **silica** embedded with mullite **ppts**. The phase formation during implantation and oxidn. is consistent with thermodn. predictions.

CC 57-2 (Ceramics)
Section cross-reference(s): 56

ST **aluminum implantation** silicon carbide property; oxidn silicon carbide **aluminum implantation**

IT Oxidation
(effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

IT 1299-86-1, Aluminum carbideal4c3 1302-93-8, Mullite
(effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

IT 409-21-2, Silicon carbideSiC, processes
(effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

IT 7429-90-5, **Aluminum**, processes
(**implantation** ion; effects of **aluminum implantation** temp. on the structure, compn. and oxidn. resistance of SiC crystals)

L55 ANSWER 3 OF 5 HCA COPYRIGHT 2003 ACS

122:320567 Effects of ~~implantation~~ temperature on the structure, composition, and ~~oxidation~~ resistance of **aluminum-**

implanted SiC. Yang, Zunde; Du, Honghua; Libera, Matthew; Singer, Irwin L. (Dep. Materials Sci. Eng., Stevens Inst. Technol., Hoboken, NJ, 07030, USA). Journal of Materials Research, 10(6), 1441-7 (English) 1995. CODEN: JMREEE. ISSN: 0884-2914. Publisher: Materials Research Society.

AB .alpha.-SiC crystals were **implanted** with **aluminum** to a high dose at room temp. or 800.degree.C. Transmission electron microscopy showed that SiC was amorphized by room temp. implantation but remained cryst. after 800.degree.C implantation. Cryst. aluminum carbide was formed and aluminum redistribution took place in SiC implanted at 800.degree.C. Implanted and unimplanted crystals were oxidized in 1 atm flowing oxygen at 1300.degree.C. Amorphization led to accelerated oxidn. of SiC. The oxidn. resistance of SiC implanted at 800.degree.C was comparable with that of pure SiC. The oxidn. layers formed on SiC implanted at both temps. consisted of **silica** embedded with mullite **ppts**. The phase formation during implantation and oxidn. is consistent with thermodn. predictions. The results from our current and earlier studies suggest that there exists an optimum range of implantation temp., probably above 500.degree.C but below 800.degree.C, which preserves the substrate crystallinity and retains the high aluminum dosage, for the enhancement of oxidn. resistance of SiC.

IT **7631-86-9**, **Silica**, formation (nonpreparative)
(oxidn. product; effects of **aluminum implantation** and **implantation** temp. on oxidn. resistance of silicon carbide)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O==Si==O

CC 57-2 (Ceramics)

ST **aluminum implantation** silicon carbide oxidn

IT Oxidation
(effects of **aluminum implantation** and **implantation** temp. on oxidn. resistance of silicon carbide)

IT 409-21-2, Silicon carbide, processes
(effects of **aluminum implantation** and **implantation** temp. on oxidn. resistance of silicon carbide)

IT 7429-90-5, **Aluminum**, processes
(**implantation** ion; effects of **aluminum implantation** and **implantation** temp. on oxidn. resistance of silicon carbide)

IT 1299-86-1, Aluminum carbide 1302-93-8, Mullite **7631-86-9**, **Silica**, formation (nonpreparative)
(oxidn. product; effects of **aluminum implantation** and **implantation** temp. on oxidn. resistance of silicon carbide)

L55 ANSWER 4 OF 5 HCA COPYRIGHT 2003 ACS
121:218777 Al-O interactions in ion-implanted crystalline silicon. Galvagno, G.; La Ferla, A.; Spinella, C.; Priolo, F.; Raineri, V.; Torrisi, Lucio; Rimini, E.; Carnera, A.; Gasparotto, A. (CORIMME, Catania, 95121, Italy). Journal of Applied Physics, 76(4), 2070-7 (English) 1994. CODEN: JAPIAU. ISSN: 0021-8979.

AB The formation and dissoln. of Si-O-Al **ppts**. have been investigated in Czochralski silicon wafers **implanted** with 6-MeV **Al** ions and thermally processed. The data have been compared to the O **pptn**. in samples implanted with 6-MeV Si or P ions. The amt. of **pptd**. O atoms is about one order of magnitude higher for Al than for the Si- or P-implanted samples. Moreover, a strong gettering of the Al atoms by the **silicon dioxide ppts**. has been obsd. The **ppt**. evolution has been studied for different annealing times and temps. The oxygen **pptn**. has been simulated by the classical theory of nucleation and growth, with the introduction of new factors that take into account the implant damage distribution, the agglomeration of point defects during the initial stages of the annealing, and the oxygen outdiffusion from the sample surface.

CC 76-3 (Electric Phenomena)

ST **aluminum** ion **implantation** silicon crystal

IT 7429-90-5, Aluminum, properties 7440-21-3, Silicon, properties 7782-44-7, Oxygen, properties
(Al-O interactions in **aluminum** ion **implanted** cryst. silicon)

L55 ANSWER 5 OF 5 HCA COPYRIGHT 2003 ACS
115:292269 Annealing behavior of ion-**implanted** **aluminum** atoms in silicon by use of capping film. Watanabe, Masahide; Ishiwata, Osamu; Nagano, Megumi; Kirihata, Humiaki (Fuji Electr. Corp. Res. and Dev., Ltd., Matsumoto, 390, Japan). Journal of the Electrochemical Society, 138(11), 3427-31 (English) 1991. CODEN: JESOAN. ISSN: 0013-4651.

AB The elec. activity of **Al** atoms **implanted** into Si is investigated. The **ppts**. of Al atoms, which can be found at the Si surface, do not contribute to the elec. cond. But with high-temp. annealing, for example at 1250.degree., the **ppts**. of Al atoms disappear. The low elec. activity of Al atoms is connected with the existence of Al **ppts**., which correspond to the oxygen **ppts**., and the out-diffusion of Al atoms. In a newly developed annealing method with a capping film covering the implanted si surface, out-diffusion of **Al** atoms from the **implanted** region into the capping film and simultaneous back-diffusion into the si substrate is evident. Such a back-diffusion mechanism increases the concn. of the al atoms and the elec. activity.

IT **7631-86-9, Silicon dioxide**, uses and miscellaneous
(annealing behavior of **implanted aluminum** and silicon coated with)

RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O══Si══O

CC 76-3 (Electric Phenomena)
ST aluminum elec activity silicon annealing; diffusion **ppt** aluminum oxygen silicon
IT **7631-86-9**, **Silicon dioxide**, uses and miscellaneous
(annealing behavior of **implanted aluminum** and silicon coated with)
IT 7440-21-3, Silicon, uses and miscellaneous
(annealing behavior of **implanted aluminum** in)
IT 12033-89-5, Silicon nitride, uses and miscellaneous
(annealing behavior of **implanted aluminum** in silicon coated with)
IT 11126-22-0, **Silicon oxide**
(**pptn**. of, in silicon with **implanted aluminum**, annealing behavior in relation to)

=> d l56 1-9 cbib abs hitstr hitind

L56 ANSWER 1 OF 9 HCA COPYRIGHT 2003 ACS
133:315033 Optical applications of ion beam irradiation. Pivin, J. C.; Dimova-Malinovska, D.; Sendova-Vassileva, M.; Nikolaeva, M.; Martucci, A. (CSNSM, IN2P3-CNRS, Orsay, 91405, Fr.). Vacuum, 58(2-3), 387-395 (English) 2000. CODEN: VACUAV. ISSN: 0042-207X. Publisher: Elsevier Science Ltd..
AB Layers of various metals (M) buried in Si, **SiO2** or Al2O3 were irradiated with various fluences of heavy MeV ions in order to obtain either silicides or nanometric particles that are expected to exhibit interesting optical properties. The mixing of noble metals, Fe and Er with these matrixes proceeds either via isotropic diffusion in the metal layer or the growth of compd. particles by planar diffusion or a dual mechanism involving recoil implantation and radiation-enhanced diffusion of M atoms in the matrix. Noble metals form clusters in the oxides directly by lateral segregation and by repptn. after diffusing over some distance. Both types of clusters contribute to the absorption resonance of the metal plasmon in the visible part of the spectrum, so that the absorption intensity is not a simple function of the mixing yield. Irradn. of co-sputtered **SiO2**:M layers with a low ion fluence induces more homogeneous **pptn**. and provides these layers with as interesting optical properties as those obtained by mixing.
IT **7631-86-9**, **Silica**, properties
(optical applications of metal ion beam irradiated Si, **SiO2** and Al2O3)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75

ST optical property metal ion **implantation** silicon **silica alumina**; iron erbium metal plasmon sputtering diffusion segregation **pptn**

IT Sputtering
(cosputtering; in prepn. of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Metals, uses
(dopant; optical applications of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Microstructure
Precipitation (chemical)
Segregation
(effect on optical applications of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Silicides
(effects on optical applications of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Plasmon
(in metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Random walk
(in optical applications of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Controlled atmospheres
Diffusion
Magnetron sputtering
(in prepn. of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Ion implantation
(metal; in prepn. of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Nanoparticles
Optical properties
Optical transmission
(optical applications of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Evaporation
(thermal; in prepn. of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT Crystal vacancies
(traps; effect on optical applications of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses
(atm.; in prepn. of metal ion beam irradiated Si, **SiO_2** and Al_2O_3)

IT 7439-89-6, Iron, uses 7440-05-3, Palladium, uses 7440-22-4,

Silver, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses
7440-57-5, Gold, uses
(dopant; in optical applications of metal ion beam irradiated Si, **SiO2** and Al2O3)

IT 7440-06-4, Platinum, uses
(dopant; optical applications of metal ion beam irradiated Si, **SiO2** and Al2O3)

IT 12020-28-9P, Erbium silicide (ErSi2) 12022-99-0P, Iron silicide (FeSi2)
(effects on optical applications of metal ion beam irradiated Si, **SiO2** and Al2O3)

IT 7440-05-3D, Palladium, ion, uses 7440-06-4D, Platinum, ion, uses
7440-22-4D, Silver, ion, uses 7440-50-8D, Copper, ion, uses
7440-57-5D, Gold, ion, uses
(implantation; effects on optical applications Si, **SiO2** and Al2O3)

IT 18472-30-5, Erbium(3+), uses
(implantation; optical applications of metal ion beam irradiated Si, **SiO2** and Al2O3)

IT 1344-28-1, Alumina, properties 7440-21-3, Silicon, properties
7631-86-9, **Silica**, properties
(optical applications of metal ion beam irradiated Si, **SiO2** and Al2O3)

L56 ANSWER 2 OF 9 HCA COPYRIGHT 2003 ACS

131:22159 Ion implantation-induced nanoscale particle formation in Al2O3 and **SiO2** via reduction. Hunt, E. M.; Hampikian, J. M. (Columbian Chemical Company, Marietta, GA, USA). Acta Materialia, 47(5), 1497-1511 (English) 1999. CODEN: ACMAFD. ISSN: 1359-6454. Publisher: Elsevier Science Ltd..

AB A novel method for creating nano-dimensional metallic **ppts**. in oxide materials using the technol. of ion implantation is reported. The redn. of single-cryst. Al2O3 to Al and fused **SiO2** to Si is induced by ion implantation with ions which are selected in accordance with the laws of thermodn. The Al and Si resulting from redn. subsequently cluster and react with other elements to form nano-dimensional **ppts**. The implantation of 150 keV Y+ and Ca+ into Al2O3 to a fluence of 5 .times. 1016 ions/cm2, results in Al particles with an av. diam. of 12.5 and 8.0 nm, resp. **Al2O3 implanted** with Mg+ at the same ion energy and fluence forms MgAl2O4 platelets ranging from 5 to 10 nm in width and between 15 and 40 nm in length. The implantation of **SiO2** with 160 keV Zr+ ions to a fluence of 1017 Zr+/cm2, gave ZrSi2 particles ranging in size between 1 and 17 nm. Consistent with thermodn. predictions, control implants of Cr+ and Si+ in alumina and Cr+ in **SiO2** do not gave particles that contain elements originally present in the substrate.

IT **1344-28-1**, **Alumina**, processes **7631-86-9**, **Silica**, processes
(ion **implantation**-induced nanoscale particle formation via redn. in)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

CC 57-2 (Ceramics)
Section cross-reference(s): 56
ST ion **implantation** induced nanoscale particle **alumina**; **silica** ion implantation induced nanoscale particle; **aluminum** nanoscale ion **implantation** induced **alumina**; silicon nanoscale ion implantation induced **silica**; yttrium ion **implantation** nanoscale particle **alumina**; calcium ion **implantation** nanoscale particle **alumina**; magnesium ion implantation nanoscale particle **silica**; zirconium ion implantation nanoscale particle **silica**; chromium ion implantation nanoscale particle **silica**
IT Ion implantation
(induced nanoscale particle formation in alumina and **silica** via redn.)
IT **1344-28-1**, **Alumina**, processes **7631-86-9**, **Silica**, processes
(ion **implantation**-induced nanoscale particle formation via redn. in)
IT 7429-90-5P, **Aluminum**, preparation
(ion **implantation**-induced nanoscale particle formation via redn. in alumina)
IT 14067-03-9, Chromium(1+), processes
(ion implantation-induced nanoscale particle formation via redn. in alumina and **silica**)
IT 14581-92-1, Magnesium(1+), processes 14701-19-0, Zirconium(1+), processes
(ion implantation-induced nanoscale particle formation via redn. in **silica**)
IT 7440-21-3P, Silicon, preparation
(ion implantation-induced nanoscale particle formation via redn. in **silica**)
IT 12039-90-6P, Zirconium silicide (ZrSi2)
(zirconium ion implantation-induced nanoscale particle formation via redn. in **silica**)

L56 ANSWER 3 OF 9 HCA COPYRIGHT 2003 ACS
122:200013 CL characterization and depth distributions of waveguide materials after 400 keV Eu implantations. Can, N.; Yang, B.; Hole, D. E.; Townsend, P. D. (School of Mathematical and Physical Sciences, University of Sussex, Brighton, BNI 9QH, UK). Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms, 96(1,2), 397-400 (English) 1995. CODEN: NIMBEU. ISSN: 0168-583X. Publisher: Elsevier.

AB The characteristic emission lines from Eu implanted with 400 keV ions at a dose of 1 .times. 1016 atoms cm-2 were studied by cathodoluminescence (CL) as a function of anneal temp. Thermal annealing was used to optically activate the Eu. Thermal annealing at 100-1000.degree. increases the CL intensity by a factor of 40 and 7 for Al2O3 and **SiO2**, resp. At >1000.degree. the intensity decreases extremely rapidly as a result of Eu **pptn** . into nonradiative clusters. No satn. is obsd. for float-glass for annealing at .ltoreq.500.degree.. The projected range and range straggling for the as-**implanted Al2O3** and **SiO2** samples were measured using the RBS method. The values extd. from the RBS are compared with those simulated by TRIM and SUSPRE computer algorithms. Exptl. results seem to be in agreement with TRIM and SUSPRE predictions. After annealing no noticeable diffusion of Eu for any samples was detected using the RBS. Results from subsequent excimer laser annealing are mentioned.

IT **7631-86-9**, **Silica**, uses
(cathodoluminescence and depth distributions after europium implantation into waveguide)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST cathodoluminescence waveguide europium **implanted alumina silica**; luminescence cathodo waveguide europium alumina **silica**

IT 1344-28-1, Alumina, uses **7631-86-9**, **Silica**, uses
(cathodoluminescence and depth distributions after europium implantation into waveguide)

L56 ANSWER 4 OF 9 HCA COPYRIGHT 2003 ACS

119:171029 Diffusion and electrical behavior of **aluminum implanted** into capped silicon. Scandurra, A.; Galvagno, G.; Raineri, V.; Frisina, F.; Torrisi, A. (Consorzio Catania Ric., Catania, 95125, Italy). Journal of the Electrochemical Society, 140(7), 2057-62 (English) 1993. CODEN: JESOAN. ISSN: 0013-4651.

AB The diffusion and the elec. behavior of **Al implanted** in the dose range of 1 x 1013-5 x 1015 cm-2 at 300 keV in capped and uncapped Si is studied. The Al-based **ppts** . which are formed when Al concn. exceeds its solid soly. in Si are elec. inactive. The out-diffusion phenomenon that is always presented in uncapped samples reduces the Al dose diffused into Si substrate. A study on the elec. activity of **Al implanted** in Si through **SiO2**, Si3N4, and Si3N4/**SiO2** capping films also is presented. In these capped samples Al segregation in **SiO2** layer occurs. The elec. active doses are small and comparable to that of uncapped samples. The authors studied the diffusivity of Al in bulk **SiO2** and

Si3N4 at 1200.degree.. The fast Al diffusion through **SiO2** thin layers is driven by a chem. reaction between Al and **SiO2** starting from the **SiO2**/Si interface.

IT **7631-86-9**, **Silica**, properties
(cap, diffusion and elec. activity of **aluminum implanted** silicon with)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 76-1 (Electric Phenomena)
Section cross-reference(s): 65, 66

ST diffusion activation **aluminum implanted** silicon

IT Electric current carriers
(concn. of, in **aluminum implanted** silicon)

IT Annealing
(diffusion and elec. behavior of **aluminum implanted** silicon after)

IT Electric activation
(of **aluminum implanted** in silicon)

IT Surface structure
(of **aluminum implanted** silicon, **ppts** . and dislocation loops in)

IT Interface
(silicon-**silica**, diffusion of aluminum through)

IT **7631-86-9**, **Silica**, properties 12033-89-5, Silicon nitride (Si3N4), properties
(cap, diffusion and elec. activity of **aluminum implanted** silicon with)

IT 7440-21-3, Silicon, properties
(diffusion and elec. activity of **aluminum-implanted**)

L56 ANSWER 5 OF 9 HCA COPYRIGHT 2003 ACS

113:163384 Electrical activity of **aluminum implanted** in silicon: an interface problem in high-power devices. Bruesch, P.; Halder, E.; Kluge, P.; Rhyner, J.; Roggwiller, P.; Stockmeier, T.; Stucki, F.; Wiesmann, H. J. (ABB Corp. Res., Baden, CH-5405, Switz.). Journal of Applied Physics, 68(5), 2226-34 (English) 1990. CODEN: JAPIAU. ISSN: 0021-8979.

AB States of **aluminum implanted** into silicon before and after annealing were studied by spreading resistance, secondary-ion mass spectroscopy, transmission electron microscopy, and energy-dispersive x-ray techniques. The case study presented here [Czochralski grown (100) Si, implanted dose 3 .times. 1015 cm-2, junction depth 6 .mu.m] reveals that the major source for the loss of the elec. activity is out-diffusion, i.e., segregation into the native **Si oxide** layer and/or evapn. into the vacuum. In addn., the activity is reduced by the formation of Al oxide **ppts**. The results are discussed in the light of

optical studies on the same materials performed previously as well as on the basis of a diffusion model which allows for out-diffusion. The large rate const. for out-diffusion indicates that the native oxide layer represents a highly reactive surface for Al. From the diffusion model it is possible to calc. an approx. elec. activity ~A(xj) as a function of junction depth xj, which qual. reproduces well the obsd. activity A(xj). This demonstrates that the case study is representative for a large no. of samples which were implanted and annealed under widely different conditions. Some tech. processes which could possibly enhance the elec. activity are discussed.

CC 76-1 (Electric Phenomena)

ST activity **aluminum implanted** silicon interface; segregation outdiffusion aluminum activity

IT 7440-21-3, Silicon, properties
(elec. activity of **aluminum implanted** in)

IT 7723-14-0, Phosphorus, properties
(elec. activity of **aluminum implanted** in silicon doped with)

IT 1344-28-1P, Aluminum sesquioxide, preparation 11126-22-0P, **Silicon oxide**
(formation of, during **aluminum implantation** in silicon, elec. activity in relation to)

IT 7446-70-0, Aluminum trichloride, uses and miscellaneous
(source from, for **aluminum implantation** into silicon)

L56 ANSWER 6 OF 9 HCA COPYRIGHT 2003 ACS

113:32727 Diffusion mechanism of ion-**implanted aluminum** atoms in annealing with multilayered film. Watanabe, Masahide; Ishiwata, Osamu; Nagano, Megumi; Kirihata, Humiaki (Fuji Electr. Corp. Res. and Dev., Ltd., Matsumoto, 390, Japan). Report of Research Center of Ion Beam Technology, Hosei University, Supplement, 8, 79-84 (English) 1990. CODEN: RCISDS. ISSN: 0286-0201.

AB The elec. activity for **Al** atoms **implanted** into Si is investigated. The **ppts**. of Al atoms can be found at the Si surface, which don't contribute to the elec. cond. But in the high temp. annealing such as 1250.degree., the **ppts**. of Al atoms disappear. The low elec. activity for Al atoms is connected with the existence of Al **ppts**. and the out-diffusion of Al atoms. In a newly developed annealing method with a multilayered film covering the implanted Si surface, it can be seen that out-diffusion of Al atoms occurs from the implanted region to the multilayered film and simultaneously back-diffusion occurs into the Si substrate. Such a back-diffusion mechanism should increase the elec. activity for **Al** atoms **implanted**.

IT **7631-86-9**, **Silica**, properties
(diffusion and elec. activity of **aluminum implant** in silicon substrate coated by)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 65
ST **aluminum implant** elec activity silicon multilayer; diffusion **aluminum implant** multilayer annealing
IT Diffusion
(of **aluminum implant** in silicon in multilayered films)
IT **7631-86-9**, **Silica**, properties 109371-84-8, Silicon nitride (Si0-1N0-1)
(diffusion and elec. activity of **aluminum implant** in silicon substrate coated by)
IT 7440-21-3, Silicon, properties
(elec. activity and diffusion of **aluminum implant** in, coated by **silica** and silicon nitride)

L56 ANSWER 7 OF 9 HCA COPYRIGHT 2003 ACS
101:82631 Bipolar integrated circuits. (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 59054222 A2 19840329 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-163255 19820921.
AB Bipolar integrated circuits are fabricated with Si doping concns. exceeding the soly. limit without **pptn**. by doping several n+ regions on a p-Si substrate, epitaxially depositing n-Si, depositing **SiO2** and Si3N4, depositing poly-Si, **implanting** Si ions, **implanting Al**, and annealing.
IT **7631-86-9**, uses and miscellaneous
(in bipolar integrated circuit fabrication)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

IC H01L021-22; H01L021-265; H01L021-76
CC 76-3 (Electric Phenomena)
IT **7631-86-9**, uses and miscellaneous 12033-89-5, uses and miscellaneous
(in bipolar integrated circuit fabrication)

L56 ANSWER 8 OF 9 HCA COPYRIGHT 2003 ACS
86:198073 Aggregation and migration of ion-**implanted** silver in lithia-**alumina**-**silica** glass. Arnold, G. W.; Borders, J. A. (Sandia Lab., Albuquerque, NM, USA). Journal of Applied Physics, 48(4), 1488-96 (English) 1977. CODEN: JAPIAU. ISSN: 0021-8979.

AB The near-surface nucleation and crystn. behavior of Ag+ ion-**implanted** Li2O-**Al2O3**-**SiO2** glasses was studied. For room-temp. Ag implants, crystn. of the glass ceramic phase was prevented by dissoln. of Ag **ppts**. and migration of Ag atoms at temps. below that necessary for formation of the glass ceramic phase. Crystn. was demonstrated after low-temp. or low-dose-rate implantations. Optical spectroscopy was used to monitor the size of colloidal Ag particles and to detect the presence of the cryst. phase. Rutherford backscattering spectroscopy (RBS) was used to obtain the depth distribution of Ag atoms in the glass and thus monitor Ag migration. For samples implanted at room temp. and at relatively high dose rates (.apprx.1 .mu.A/cm2), aggregation of the Ag atoms into colloids occurred during implantation and also during subsequent annealing to temps. .ltoreq.350.degree.C. The RBS spectra indicate some migration of the Ag to the surface at these temps. For annealing temps. >350.degree.C, both optical and RBS measurements show that Ag is lost from the glass surface. The initial spatial distribution of the Ag for these high-dose-rate room-temp. implantations was distorted by interactions with the assocd. damage and possibly by local elec. fileds caused by neutralization of the implanted ions. It was possible to obtain dispersed Ag nuclei by implanting at low sample temps. (80 K) or at low-beam current (.apprx.200 nA/cm2) to reduce ion-beam heating. Although some migration to the surface was seen in these samples, it occurred at higher temps. and cryst. **pptn**. was achieved by annealing at 550.degree.C.

CC 75-1 (Crystallization and Crystal Structure)
Section cross-reference(s): 57, 76

L56 ANSWER 9 OF 9 HCA COPYRIGHT 2003 ACS

84:8258 Near-surface nucleation and crystallization of an ion-**implanted** lithia-**alumina**-**silica** glass.
Arnold, G. W. (Sandia Lab., Albuquerque, NM, USA). Journal of Applied Physics, 46(10), 4466-73 (English) 1975. CODEN: JAPIAU. ISSN: 0021-8979.

AB A Au+ [7440-57-5]-**implanted** Li2O [12057-24-8]-**Al2O3**-**SiO2** was surface crystd. Annealing of a glass sample implanted with 258-keV Au+ at 550.degree. results in the growth of colloidal Au particles of radius 18-35-.ANG.. The Au particles constitute sites for the **pptn**. of Li2SiO3 [10102-24-6] crystals at 550.degree.. Further annealing at 750.degree. allows the growth of quartz [14808-60-7] and .beta.-spodumene [1302-37-0] crystals. The crystd. surface obtained after the high-temp. anneal was characterized by a Knoop microhardness no. of 626, which is of the order of that obtained for com. vol.-crystd. glass-ceramics of similar compn.

CC 57-1 (Ceramics)
Section cross-reference(s): 75

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L57       132988 S BET OR B(W)E(W)T OR S(W)A OR SURFACE#(2A)AREA# OR M2(W)
L58           16 S L22 AND L57
L59          495 S L9 AND L57
L60           52 S L59 AND L8
L61              QUE IMPLANT? OR ADMIX? OR IMMIX? OR COMMIX? OR INTERMIX?
L62            1 S L60 AND (L61 OR L28)
L63            0 S L59 AND (L50 OR L51)
L64              QUE ALUMINUM# OR AL
L65          375 S L7 AND (L8 OR L64) AND L57 AND L32
L66            5 S L65 AND (L61 OR L28)
L67            3 S (L62 OR L66) NOT (L47 OR L48 OR L55 OR L56)
L68           14 S L58 NOT (L47 OR L48 OR L55 OR L56 OR L67)

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L67 ANSWER 1 OF 3 HCA COPYRIGHT 2003 ACS

136:122017 **Dopants** for synthesis of stable bimodally porous titania. Kim, Jinsoo; Song, Ki Chang; Foncillas, Sandra; Pratsinis, Sotiris E. (Institute of Process Engineering, ETH-Zentrum, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.). Journal of the European Ceramic Society, 21(16), 2863-2872 (English) 2001. CODEN: JECSER. ISSN: 0955-2219. Publisher: Elsevier Science Ltd..

AB Bimodally porous titania powders **doped** with **alumina**, zirconia, and **silica** were made by wet **pptn**. from organometallic precursors (for **Al** /Ti=0.05-0.4, and Zr/Ti=Si/Ti=0.1). **Doping** retards not only the anatase-to-rutile phase transformation, but also the crystallite growth of titania. So it was used to control the powder phase compn. and pore structure at high temps. The extent of the retarding effect on pore structure and phase transformation increased with increasing **alumina** concn. The effectiveness of these **dopants** follows the order zirconia >**silica** >**alumina**. The **dopants** also reduce the loss of **surface area** of the calcined powders by decreasing the sintering and phase transformation rates. All powders exhibited bimodal pore size distributions (PSD) with fine intra-particle pores (1-4 nm) and larger inter-particle pores (10-120 nm). However, the intra-particle pores of the pure titania disappeared at 600.degree.C, while the bimodal PSD of **doped** titania was maintained up to 750.degree.C.

IT **1344-28-1, Aluminum oxide (Al2O3**), uses **7631-86-9, Silica**, uses
(**dopant**; effects of **alumina, silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 57-2 (Ceramics)
ST titania porous ceramic powder **doping** structure stability; zirconia **doping** titania porous ceramic powder structure stability; **alumina doping** titania porous ceramic powder structure stability; **silica doping** titania porous ceramic powder structure stability
IT Powders
(ceramic, titania; effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)
IT Sintering
Structural phase transition
Surface area
Thermal stability
(effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)
IT Ceramics
(powders, titania; effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)
IT 1314-23-4, Zirconium oxide (ZrO_2), uses **1344-28-1**, **Aluminum oxide** (**Al_2O_3**), uses
7631-86-9, **Silica**, uses
(**dopant**; effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)
IT 1317-80-2, Rutile (TiO_2)
(effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)
IT 1317-70-0, Anatase (TiO_2)
(effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)
IT 13463-67-7, Titanium oxide (TiO_2), processes
(porous powders; effects of **alumina**, **silica**, and zirconia **dopants** on structure stability of titania porous ceramic powders)

L67 ANSWER 2 OF 3 HCA COPYRIGHT 2003 ACS
134:330181 French SON 68 nuclear glass alteration mechanisms on contact with clay media. Gin, S.; Jollivet, P.; Mestre, J. P.; Jullien, M.; Pozo, C. (Valrho DRRV/SCD, Commissariat a l'Energie Atomique (CEA), Bagnols-sur-Ceze, 30207, Fr.). Applied Geochemistry, 16(7-8), 861-881 (English) 2001. CODEN: APPGEY. ISSN: 0883-2927. Publisher: Elsevier Science Ltd..
AB The leaching behavior of the nonradioactive French SON 68

(R7T7-type) nuclear glass was investigated in the presence of FoCa7 clay. Static expts. were carried out at 90.degree.C under conditions favorable to convective transfer. Three test environments were compared: a clay medium, the same clay medium **doped** with 2.5 wt.% **silica** gel, and pure water. These expts. showed that in raw clay the glass alteration rate remained near the initial value for several hundred days, whereas in pure water at the same temp. and with the same glass-**surface -area**-to-soln.-vol. (S/V) ratio the alteration rate quickly dropped by several orders of magnitude after the formation of a protective gel layer. This major difference between the two media can be attributed to transfer of the principal gel-forming elements (Si, **Al**, Ca) into the clay medium as a result of sorption phenomena and probably the **pptn**. of silicate phases. The addn. of **silica** gel to the clay not only neutralizes the clay sorption capacity, but also protects the glass from significant alteration (the glass was altered appreciably less than in pure water). This article discusses the mechanisms limiting the glass alteration kinetics in the test media. The gel that forms by reconstitution of hydrolyzed glass species at the glass/clay interface is shown to constitute a diffusion barrier whose effectiveness depends to a large degree on the conditions under which species are removed by the external medium. Interpreting the exptl. data from this standpoint leads to a reexamn. of the classic model in which the glass alteration kinetics are inhibited by the dissolved silicon content.

IT **1344-28-1, Aluminum oxide (Al_2O_3)**, processes **7631-86-9, Silica**, processes
(glass, borosilicate, nuclear wasteform; alteration mechanisms of borosilicate nuclear waste glass on contact with clay media)

RN 1344-28-1 HCA

CN Aluminum oxide (Al_2O_3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

CC 57-1 (Ceramics)
Section cross-reference(s): 71

IT Diffusion
Surface area
(alteration mechanisms of borosilicate nuclear waste glass on contact with clay media)

IT **Silica** gel, formation (nonpreparative)
(alteration product; alteration mechanisms of borosilicate nuclear waste glass on contact with clay media)

IT 1303-86-2, Boron oxide (B_2O_3), processes 1305-78-8, Calcia, processes 1309-37-1, Ferric oxide, processes 1313-59-3, Sodium oxide (Na_2O), processes 1314-13-2, Zinc oxide (ZnO), processes 1314-23-4, Zirconium oxide (ZrO_2), processes **1344-28-1**,

Aluminum oxid **(Al2O3)**, processes
7631-86-9, **Silica**, processes 12057-24-8, Lithium
oxide (Li2O), processes
(glass, borosilicate, nuclear wasteform; alteration mechanisms of
borosilicate nuclear waste glass on contact with clay media)

L67 ANSWER 3 OF 3 HCA COPYRIGHT 2003 ACS
121:234004 Manufacture of compositions based on mixed oxides of cerium
and zirconium, the compositions obtained and their use in the
manufacture of catalysts and catalyst supports, and the monolithic
catalysts obtained and their use. Chopin, Thierry; Vilmin, Gabriel
(Rhone Poulenc Chimie, Fr.). Fr. Demande FR 2701471 A1 19940819, 23
pp. (French). CODEN: FRXXBL. APPLICATION: FR 1993-1450 19930210.
AB The process comprises mixing (in stoichiometric proportions based on
the final compn. desired) a Zr sol with a Ce sol having Zr sol/Ce
sol particle diam. ratio .gtoreq.5, adding a base, and recovering
and calcining the **ppt**. The mixed oxides have sp.
surface area .gtoreq.10 **m2/g**.
The catalysts and catalyst supports may contain **Al2O3**.
The catalysts comprise a monolithic refractory support coated with
catalytically active elements, and used in catalytic converters.
IT **1344-28-1**, **Alumina**, uses **7631-86-9**,
Silica, uses
(**dopant**; in cerium zirconium oxide catalysts and
catalyst supports for catalytic converters)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O══Si══O

IC ICM C01G025-02
ICS C01F017-00; B01J021-06; B01J023-10; B01J037-00; B01D053-36
CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 59, 67
ST cerium zirconium oxide catalyst support; **aluminum** cerium
zirconium oxide support; catalytic converter catalyst support;
dopant cerium zirconium oxide
IT Alkaline earth oxides
Rare earth oxides
(**dopants**; in cerium zirconium oxide catalysts and
catalyst supports for catalytic converters)
IT 1303-86-2, Boron oxide, uses 1304-28-5, Barium oxide, uses
1304-76-3, Bismuth oxide, uses 1305-78-8, Calcia, uses
1308-38-9, Chromium oxide (Cr2O3), uses 1309-48-4, Magnesia, uses
1312-81-8, Lanthanum oxide (La2O3) 1313-96-8, Niobium pentoxide
1313-97-9, Neodymium oxide (Nd2O3) 1314-36-9, Yttria, uses
1314-62-1, Vanadium pentoxide, uses **1344-28-1**,
Alumina, uses **7631-86-9**, **Silica**, uses

12024-21-4, Gallium oxide (Ga_2O_3) 12036-32-7, Praseodymium oxide (Pr_2O_3) 12060-08-1, Scandium oxide (Sc_2O_3) 13463-67-7, Titania, uses 37300-04-2, Thorium oxide 59763-75-6, Tantalum oxide
(**dopant**; in cerium zirconium oxide catalysts and catalyst supports for catalytic converters)

IT 1310-58-3, Potassium hydroxide, reactions 1310-73-2, Sodium hydroxide, reactions 1336-21-6, Ammonium hydroxide
(**precipitant**; in cerium zirconium oxide catalysts and catalyst support manuf. for catalytic converters)

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L68 ANSWER 1 OF 14 HCA COPYRIGHT 2003 ACS

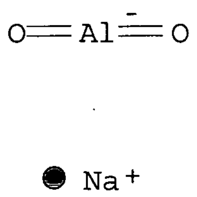
138:371082 Preparation of highly ordered mesoporous molecular sieves. Fortier, Luc; Fournier, Pierre; Kaliaguine, Serge; ~~Trong~~ On, Do (Silicycle Inc., Can.). PCT Int. Appl. WO 2003037511 A1 20030508, 44 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-CA1682 20021101. PRIORITY: US 2001-PV330847 20011101.

AB Highly ordered mesoporous silica mol. materials are prepd. using **sodium silicate** as a silica source, **sulfuric acid** and nonionic poly(alkylene oxide) surfactants or nonionic amphiphilic bloc copolymers as structure-directing agents. An **aq**. soln. of **sodium silicate** is added to an **aq**. soln. of the surfactant at 12-28.degree.C and the mixt. is stirred for at least two hours to obtain a homogeneous soln. **Sulfuric acid** (80%) is added to the soln. to form a gel which is aged by stirring at ambient temp. for 12-24 h and subsequently heated for at least 24 h at 60-150.degree.C to increase silanol group condensation, thereby forming a solid ppt. The recovered ppt. is treated with **water** at 60-135.degree.C and near neutral pH to remove residual surfactant and to complete silanol group condensation. The ppt. is calcined at 400-650.degree.C. Instead of **sodium silicate**, sodium aluminate can be used as starting material. The surfactants can be BRIJ 56, BRIJ 58, BRIJ 76, PLURONIC P-123, PLURONIC F-127. The mesoporous silica materials obtained have hexagonal and cubic structures, uniform pore size and high **surface areas**.

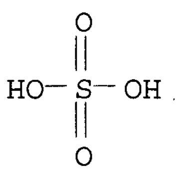
IT **1302-42-7**, Sodium aluminate **7664-93-9**, **Sulfuric acid**, reactions
(prepn. of highly ordered mesoporous mol. sieves)

RN 1302-42-7 HCA

CN Aluminate (AlO21-), sodium (9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B01J035-10
ICS B01J029-03; C01B037-02; C01B037-00; B01J037-03
CC 49-4 (Industrial Inorganic Chemicals)
IT Molecular sieves
Pore size
Surface area
(prepn. of highly ordered mesoporous mol. sieves)
IT **1302-42-7**, Sodium aluminate 3087-36-3, Titanium tetraethoxide **7664-93-9**, **Sulfuric acid**
, reactions
(prepn. of highly ordered mesoporous mol. sieves)

L68 ANSWER 2 OF 14 HCA COPYRIGHT 2003 ACS
137:218674 Catalytic activities of nickel-containing catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties. Sohn, Jong Rack (Engineering College, Department of Industrial Chemistry, Kyungpook National University, Taegu, 702-701, S. Korea). Catalysis Today, 73(1-2), 197-209 (English) 2002. CODEN: CATTEA. ISSN: 0920-5861. Publisher: Elsevier Science B.V..
AB Nickel oxide-silica catalysts were prepd. by pptn. from an acidic soln. of a nickel salt-**sodium silicate** mixt. Two types of nickel hydrosilicate, montmorillonite and antigorite are formed in the catalysts. Catalytic activities of nickel silicates for ethylene dimerization and butene isomerization run parallel when the catalysts are activated by evacuation at elevated temps., giving two maxima in activities. The variations in catalytic activities are closely correlated to the acidity of catalysts. The acid site responsible for the catalytic activity is protonic on montmorillonite, while non-protonic on antigorite, as evidenced by the effect of **water** content and the IR spectra of adsorbed pyridine. Catalytic activities of NiO-TiO2 catalysts modified with H2SO4, H3PO4, H3BO3 and H2SeO4 for ethylene

dimerization and butene isomerization were examd. The order of catalytic activities for both reactions was found to be NiO-TiO2/SO42-.mchgt.NiO-TiO2/PO43->NiO-TiO2/BO33->NiO-TiO2/SeO42->NiO-TiO2, showing clear dependence of catalytic activity upon acid strength. Catalytic activity of nickel sulfate supported on .gamma.-Al2O3 (NiSO4/.gamma.-Al2O3) for ethylene dimerization is also closely correlated to the acidity of catalysts, showing that the active sites consist of a low-valent nickel (Ni+) and an acid.

IT **1344-28-1**, Alumina, uses
(JRC-ALO 2; catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

RN 1344-28-1 HCA

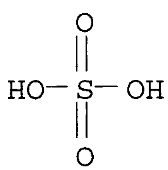
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-93-9**, **Sulfuric acid**, uses
(catalyst modifier; catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

ST catalytic activity nickel catalyst butene isomerization acid modified; ethylene dimerization nickel catalyst acid modified; **sulfuric acid** modified catalyst ethylene dimerization butene isomerization; phosphoric acid modified catalyst ethylene dimerization; selenic acid modified catalyst ethylene dimerization

IT Binding energy
Dimerization catalysts
Isomerization catalysts
Surface area
pH
(catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

IT **1344-28-1**, Alumina, uses
(JRC-ALO 2; catalytic activities of nickel-contg. catalysts for ethylene dimerization and butene isomerization and their relationship to acidic properties)

IT 7664-38-2, Phosphoric acid, uses **7664-93-9**, **Sulfuric acid**, uses 7783-08-6, Selenic acid 10043-35-3, Boric acid, uses
(catalyst modifier; catalytic activities of nickel-contg.

catalysts for ethylene dimerization and butene isomerization and their relationship to acidic ~~properties)~~

L68 ANSWER 3 OF 14 HCA COPYRIGHT 2003 ACS

132:323641 Aluminum silicon oxide gel granules and their manufacture. Zhang, Chongmin; Li, Jianshe; Hu, Ximei (Qingdao Haiyang Chemical Industry Group Corp., Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1206020 A 19990127, 10 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1997-105983 19970721.

AB The granules have a [(SiO4)mAlO3] network contg. 89.5-98% SiO2 and 0.5-9% Al2O3, av. particle diam/ 0.5-8 mm, sp. **surface area** 450-800 **m2/g**, av. pore vol. 0.3-0.6 mL/g, av. pore dial. 0.0015-0.0035 .mu.m, and adsorption capacities 5-15 and 30-50% at .ltoreq.20 and .ltoreq.80% relative humidities, resp. The granules are prepd. by reacting a **Na silicate** soln., having SiO2 content 8-22%, with an acidified 0.3-12% Al2(SO4)3 soln. at 5-25.degree., 0.1-1.0 MPa, and pH 7-12 in a cascade mixing-granulating means and spraying the reaction mixt. in air to from granules; aging the granules in a pH 7-11 soln. at 30-60.degree. for 1-6 h; soaking in an acidic soln. at 30-69.degree. for 0.5-10 h; washing 2-15 times with **water** at 20-70.degree. with a washing duration of 1-6 h/wash and a total of 6-30 h; soaking an **aq**. 0.01-% surfactant soln. having surface tension .ltoreq.40 dyne/cm for 1-24 h; and drying in 60-180.degree. air flow for 3-72 h.

IT **159995-97-8P**, Aluminum silicon oxide
(structure and properties and manuf. of aluminum silicon oxide gel granules)

RN 159995-97-8 HCA

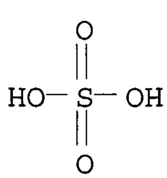
CN Aluminum silicon oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Si	x	7440-21-3
Al	x	7429-90-5

IT **7664-93-9**, **Sulfuric acid**, uses
(structure and properties and manuf. of aluminum silicon oxide gel granules)

RN 7664-93-9 HCA

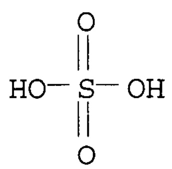
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**, **Sodium silicate**

10043-01-3, Aluminum sulfate
(structure and properties and manuf. of aluminum silicon oxide gel granules)

RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

IC ICM C08G077-58
ICS B01J002-04; B01D053-28
CC 49-11 (Industrial Inorganic Chemicals)
IT **159995-97-8P**, Aluminum silicon oxide
(structure and properties and manuf. of aluminum silicon oxide gel granules)
IT **7664-93-9**, **Sulfuric acid**, uses
(structure and properties and manuf. of aluminum silicon oxide gel granules)
IT **1344-09-8**, **Sodium silicate** 7647-01-0, Hydrochloric acid, processes 7697-37-2, Nitric acid, processes **10043-01-3**, Aluminum sulfate
(structure and properties and manuf. of aluminum silicon oxide gel granules)

L68 ANSWER 4 OF 14 HCA
131:313424 Suspension type grout agents and soil strengthening thereby. Kitamura, Tadashi; Nagata, Masahiko (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 11293246 A2 19991026 Heisei, 29 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-290975 19981013. PRIORITY: JP 1998-32986 19980216.

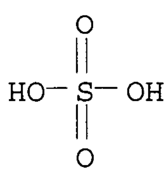
AB The suspension type grout agents comprise (1) **water** -granulated blast-furnace slag having 95 wt.% particle diam. on the particle diam. accumulative curve .ltoreq.15 .mu.m and sp. **surface area** 0.85-3 **m2/g**, (2) Ca(OH)2 and/or CaO having 95 wt.% particle diam. on the particle diam. accumulative curve .ltoreq.30 .mu.m and sp. **surface area** 1-50 **m2/g**, (3) bulky org. macromol. dispersion aids having inertia square radius .gtoreq.150 .ANG., (4) **water**-sol. sulfates selected from bisulfates, sulfites, bisulfites, alkali metal sulfates, persulfates, thiosulfates, MgSO4,

Al sulfate, and alum, (5) soln. type alkali stimulants selected from (a) NaOH and/or KOH soln., (b) Na2CO3 and/or K2CO3 or KNaCO3, (c) solid or liq. sea brine, (d) Na aluminate and/or K aluminate, (e) alkali **water** glass soln., and/or (f) colloidal SiO2 soln. at pH 7.5-12, and (6) **water** wherein **water** /(Ca(OH)2+CaO+slag) ratio 1-6, dispersion aid/(Ca(OH)2+CaO+slag) ratio 0.005-0.05, and the **water**-sol. sulfate content is 1-100 kg/m3, and the alkali stimulant content is 0.001-100 kg (as solids)/m3. The grout agents are press impregnated into sandy soils and/or conglomerative soils contg. org. acids (e.g., humic acid) through grout injection tubes to strengthen the soils. The grout agents also used for construction of underground piles or walls.

IT **1344-09-8**, **Water** glass **10043-01-3**, Aluminum sulfate **11137-59-0**, Potassium aluminate
(strengthening of humic acid-contg. soils by suspension type grouts contg. slags and lime and dispersants and sulfates and alkali stimulants)

RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



● 2/3 Al

RN 11137-59-0 HCA
CN Aluminum potassium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
K	x	7440-09-7
Al	x	7429-90-5

IC ICM C09K017-40
ICS C09K017-02; C09K017-06; C09K017-12; E02D003-12; E02D005-18; C09K103-00
CC 58-5 (Cement, Concrete, and Related Building Materials)
IT 497-19-8, Sodium carbonate (Na2CO3), miscellaneous 584-08-7, Potassium carbonate (K2CO3) 1305-62-0, Calcium hydroxide (Ca(OH)2), miscellaneous 1305-78-8, Calcium oxide (CaO),

miscellaneous 1310-58-3, Potassium hydroxide, miscellaneous 1310-73-2, Sodium hydroxide (NaOH), miscellaneous **1344-09-8**, **Water** glass 7487-88-9, **Sulfuric acid** magnesium salt (1:1), miscellaneous 7631-86-9, Silica, miscellaneous 7631-90-5, Sodium bisulfite 7681-38-1, Sodium bisulfate 7727-21-1, Potassium persulfate 7757-82-6, Sodium sulfate, miscellaneous 7772-98-7, Sodium thiosulfate 7778-80-5, Potassium sulfate, miscellaneous **10043-01-3**, Aluminum sulfate 10424-09-6, Potassium sodium carbonate (KNaCO3) **11137-59-0**, Potassium aluminate 11138-49-1, Sodium aluminate

(strengthening of humic acid-contg. soils by suspension type grouts contg. slags and lime and dispersants and sulfates and alkali stimulants)

L68 ANSWER 5 OF 14 HCA COPYRIGHT 2003 ACS

131:299817 Powders of amorphous silica or mixed oxide-silica having a continuous network matrix and preparation thereof for catalyst supports for olefin polymerization. Pecoraro, Theresa A.; Chan, Ignatius Y.; Whaley, Darryl K.; Auburn, Pamela R. (Chevron Chemical Company LLC, USA). PCT Int. Appl. WO 9952627 A1 19991021, 86 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US7616 19990407. PRIORITY: US 1998-60340 19980414.

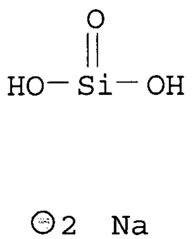
6107236

AB An amorphous silica or mixed oxide-silica base compn. comprises a nonparticulate, dense, continuous network matrix and encapsulated, less dense, nonparticulate regions with true macropores. The pore size and distribution and vol. of the pore size can be tailored over a wide range for unique microstructures and varied phys. properties. Thus, 4.098 kg soln. of 1:3.22 Na2O-SiO2 in 15 kg deionized **water** was adjusted to pH <0 with **aq**. H2SO4, gelled in a high-shear reactor with addn. of 127 g acid/min and 450-639 g base/min, washed, spray-dried, and calcined, giving **surface area** (**BET**) 564 **m2/g**, pore vol. 1.02 cc/g, mean mesopore diam. 101.ANG., and a continuous network matrix having d. 2 and matrix pore size 10 nm. An **aq**. chromium(III) acetate hydroxide soln. was deposited on the powder, and the catalyst (1.0 wt.% Cr) was used with IBAO (0.126 g catalyst, Al-Cr ratio 8.3) to polymerize ethylene, showing 96.40 L ethylene consumed in 0.88 h with activity 1625.8 g/g/h and polymer yield 180.27 g, compared with 80.10 L, 1.15 h, 632.8 g/g/h, and 109.16 g, resp., when using 0.150 g EP 30X catalyst (Al-Cr ratio 5.9).

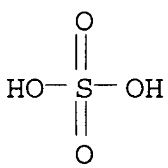
IT **6834-92-0**

(gelation of; powders of amorphous silica or mixed oxide-silica having a continuous network matrix for catalyst supports for olefin polymn.)

RN 6834-92-0 HCA
CN Silicic acid (H2SiO3), disodium salt (8CI, 9CI) (CA INDEX NAME)



IT **7664-93-9**, **Sulfuric acid**, uses
(in gelation of silica or mixed oxide-silica to form a continuous network matrix for catalyst supports for olefin polymn.)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **159995-97-8**, Aluminum silicon oxide
(powders of amorphous silica or mixed oxide-silica having a continuous network matrix for catalyst supports for olefin polymn.)
RN 159995-97-8 HCA
CN Aluminum silicon oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Si	x	7440-21-3
Al	x	7429-90-5

IC ICM B01J021-08
ICS B01J021-12; C08F010-00; C01B033-12
CC 35-3 (Chemistry of Synthetic High Polymers)
IT **6834-92-0**
(gelation of; powders of amorphous silica or mixed oxide-silica having a continuous network matrix for catalyst supports for olefin polymn.)
IT 57-13-6, Urea, uses 506-87-6, Ammonium carbonate 1066-33-7, Ammonium bicarbonate 1336-21-6, Ammonium hydroxide
7664-93-9, **Sulfuric acid**, uses
(in gelation of silica or mixed oxide-silica to form a continuous network matrix for catalyst supports for olefin polymn.)

IT 7631-86-9, Silica, uses 52337-09-4, Silica titania
159995-97-8, Aluminum silicon oxide 174179-90-9, Silicon
vanadium oxide 174633-44-4, Silicon zirconium oxide
(powders of amorphous silica or mixed oxide-silica having a continuous network matrix for catalyst supports for olefin polymn.)

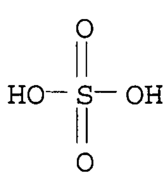
L68 ANSWER 6 OF 14 HCA COPYRIGHT 2003 ACS
130:360441 Preparation and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording apparatus. Hayashi, Kazuyuki; Tanaka, Yasuyuki; Iwasaki, Keisuke; Morii, Hiroko (Toda Kogyo Corp., Japan). Eur. Pat. Appl. EP 919522 A1 19990602, 130 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1998-309695 19981126. PRIORITY: JP 1997-342163 19971126; JP 1998-64739 19980227.

AB Needle-shaped (i.e., acicular) hematite particles suitable as non-magnetic particles for a non-magnetic undercoat layer of a magnetic recording medium have a geometrical std. deviation of the major axis diam. of .ltoreq.1.50, a geometrical std. deviation of the minor axis diam. of .ltoreq.1.35, a **BET** sp. **surface area** of 35.9-150 **m2/g**, and an av. major axis diam. of 0.004-0.295 .mu.m. The particles can also contain 0.05-50 wt.% oxides or hydroxides of aluminum or silicon (calcd. as Al or Si). The particles are prepd. by pptn. of goethite (e.g., of **aq**. FeSO4 by Na2CO3), heat treatment of acicular goethite particles (major axis diam. 0.01-0.25 .mu.m, geometrical std. deviation of minor axis diam. .ltoreq.1.37) at 100-200.degree. followed by dehydration of the dried particles at 550-850.degree.. A magnetic recording medium fabricated from these particles consisted of an undercoat of the non-magnetic particles, in which the particles are deposited on a non-magnetic base film using a binder resin (typically a sulfonated polymer); a magnetic coating film of a binder resin and magnetic particles completes the recording medium.

IT **7664-93-9**, **Sulfuric acid**, uses
(acid dissoln. with; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

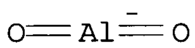
RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



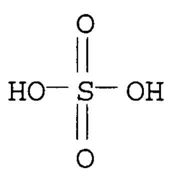
IT **1302-42-7**, Sodium aluminate **10043-01-3**, Aluminum
sulfate **21645-51-2**, Aluminum hydroxide, reactions
(aluminum source; in prepn. and use of acicular hematite

particles as non-magnetic undercoat layer of magnetic recording app.)
RN 1302-42-7 HCA
CN Aluminate (AlO21-), sodium (9CI) (CA INDEX NAME)



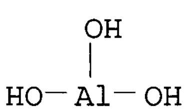
Na^+

RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

RN 21645-51-2 HCA
CN Aluminum hydroxide (Al(OH)3) (9CI) (CA INDEX NAME)



IT **1344-09-8**, **Water** glass
(silicon source; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C01G049-06
ICS G11B005-704
CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 42, 49
IT **7664-93-9**, **Sulfuric acid**, uses
(acid dissoln. with; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)
IT **1302-42-7**, Sodium aluminate **10043-01-3**, Aluminum sulfate 11138-49-1, Sodium aluminate **21645-51-2**,

Aluminum hydroxide, reactions
(aluminum source; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

IT **1344-09-8**, **Water** glass 7631-86-9, Colloidal silica, reactions
(silicon source; in prepn. and use of acicular hematite particles as non-magnetic undercoat layer of magnetic recording app.)

L68 ANSWER 7 OF 14 HCA COPYRIGHT 2003 ACS

129:232956 Process for removing sulfur compounds from hydrocarbon streams. Kulprathipanja, Santi; Nemeth, Laszlo T.; Holmgren, Jennifer S. (Uop LLC, USA). U.S. US 5807475 A 19980915, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1996-751829 19961118.

AB A process for removing sulfur contg. compds. from various hydrocarbon streams is disclosed and claimed. The process involves contacting the feedstream with an adsorbent such as nickel exchanged zeolite X or Y, or a smectite layered clay having a **surface area** of at least 150 **m2 /g**, thereby adsorbing the sulfur compds. onto the adsorbent.

IT **12174-11-7**, Palygorskite
(Minugel; process for removing sulfur compds. from hydrocarbon streams)

RN 12174-11-7 HCA

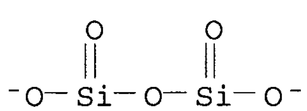
CN Palygorskite ([Mg(Al0.5-1Fe0-0.5)]Si4(OH)O10.4H2O) (9CI) (CA INDEX NAME)

CM 1

CRN 111059-81-5
CMF Al . Fe . H O . Mg . O5 Si2
CCI TIS

CM 2

CRN 20328-07-8
CMF O5 Si2



CM 3

CRN 14280-30-9
CMF H O

OH^-

CM 4

CRN 7439-95-4
CMF Mg

Mg

CM 5

CRN 7439-89-6
CMF Fe

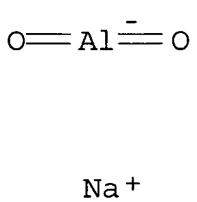
Fe

CM 6

CRN 7429-90-5
CMF Al

Al

IT **1302-42-7**, Aluminum sodium oxide (AlNaO2) **1319-41-1**
, Saponite **1344-09-8**, **Water** glass
1344-28-1, Alumina, uses **12172-85-9**, Beidellite
12174-06-0, Nontronite
(process for removing sulfur compds. from hydrocarbon streams)
RN 1302-42-7 HCA
CN Aluminate (AlO21-), sodium (9CI) (CA INDEX NAME)



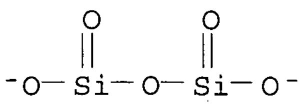
RN 1319-41-1 HCA
CN Saponite ((Mg0.5-1Fe0-0.5)3(Si3.67Al0.33)(Na0-0.33Ca0-
0.17)(OH)2O10.4H2O) (9CI) (CA INDEX NAME)

CM 1

CRN 135663-11-5
CMF Al . Ca . Fe . H O . Mg . Na . O5 Si2 . O
CCI TIS

CM 2

CRN 20328-07-8
CMF O5 Si2



CM 3

CRN 17778-80-2
CMF O

O

CM 4

CRN 14280-30-9
CMF H O

OH^-

CM 5

CRN 7440-70-2
CMF Ca

Ca

CM 6

CRN 7440-23-5
CMF Na

Na

CM 7

CRN 7439-95-4
CMF Mg

Mg

CM 8

CRN 7439-89-6
CMF Fe

Fe

CM 9

CRN 7429-90-5
CMF Al

Al

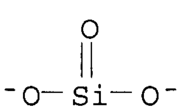
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12172-85-9 HCA
CN Beidellite (Al2(Si3.67Al0.33)(Na0-0.33Ca0-0.17)(OH)2O10.xH2O) (9CI) (CA INDEX NAME)

CM 1

CRN 111059-65-5
CMF Al . Ca . Na . O3 Si
CCI TIS

CM 2

CRN 15593-90-5
CMF O3 Si



CM 3

CRN 7440-70-2

CMF Ca

Ca

CM 4

CRN 7440-23-5
CMF Na

Na

CM 5

CRN 7429-90-5
CMF Al

Al

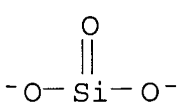
RN 12174-06-0 HCA
CN Nontronite (Fe2(Si3.67Al0.33)Na0.33(OH)2O10.xH2O) (9CI) (CA INDEX NAME)

CM 1

CRN 111186-70-0
CMF Al . Fe . Na . O3 Si
CCI TIS

CM 2

CRN 15593-90-5
CMF O3 Si



CM 3

CRN 7440-23-5
CMF Na

Na

CM 4

CRN 7439-89-6
CMF Fe

Fe

CM 5

CRN 7429-90-5
CMF Al

Al

IC ICM C10G017-00
NCL 208208000R
CC 51-4 (Fossil Fuels, Derivatives, and Related Products)
IT **12174-11-7**, Palygorskite
(Minugel; process for removing sulfur compds. from hydrocarbon streams)
IT 497-19-8, Sodium carbonate (Na_2CO_3), uses **1302-42-7**, Aluminum sodium oxide ($AlNaO_2$) 1308-38-9, Chromia, uses 1310-73-2, Sodium hydroxide (NaOH), uses 1314-23-4, Zirconium oxide (ZrO_2), uses 1318-93-0, Montmorillonite, uses **1319-41-1**, Saponite 1336-21-6, Ammonium hydroxide **1344-09-8**, **Water** glass **1344-28-1**, Alumina, uses 7487-88-9, **Sulfuric acid** magnesium salt (1:1), uses 7631-86-9, Silica, uses 7631-95-0, Sodium molybdate (Na_2MoO_4) 7704-34-9, Sulfur, uses 7718-54-9, Nickel chloride ($NiCl_2$), uses **12172-85-9**, Beidellite 12173-47-6, Hectorite **12174-06-0**, Nontronite 12424-32-7, Sauconite 13463-67-7, Titanium oxide (TiO_2), uses
(process for removing sulfur compds. from hydrocarbon streams)

L68 ANSWER 8 OF 14 HCA COPYRIGHT 2003 ACS
127:362487 Toothpaste composition comprising a silica and calcium carbonate based abrasive or additive, compatible with fluorine. Amiche, Frederic; Dromard, Adrien (Rhone-Poulenc Chimie, Fr.; Amiche, Frederic; Dromard, Adrien). PCT Int. Appl. WO 9739728 A1 19971030, 22 pp. DESIGNATED STATES: W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (French). CODEN: PIXXD2. APPLICATION: WO 1997-FR721 19970422. PRIORITY: FR 1996-5135 19960422.
AB A toothpaste compn. comprising at least one decay preventing agent, with a fluorine-contg. compd. base, and at least one silica, is

characterized in that the silica is constituted of particles contg. a dense active silica shell and a calcium carbonate core. The compatibility of an abrasive comprising silica shell and calcium carbonate core (**BET** = 2.9m2/g) (prepn. given) in a mixt. of **aq**. soln. of sorbitol and glycerol with sodium monofluorophosphatae was 83 as compared with 76% Sturcal H.

IT **7784-18-1**, Aluminum fluoride
(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)

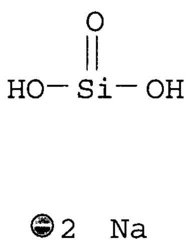
RN 7784-18-1 HCA

CN Aluminum fluoride (AlF3) (9CI) (CA INDEX NAME)

IT **6834-92-0 7664-93-9**, **Sulfuric acid**, reactions
(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)

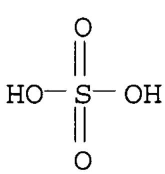
RN 6834-92-0 HCA

CN Silicic acid (H2SiO3), disodium salt (8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM A61K007-16
ICS C09C003-06

CC 62-7 (Essential Oils and Cosmetics)

IT 471-34-1, Calcium carbonate, biological studies 7320-34-5, Potassium pyrophosphate 7631-86-9, Silica, biological studies 7632-05-5, Sodium orthophosphate 7681-49-4, Sodium fluoride, biological studies 7722-88-5 7758-29-4, Sodium tripolyphosphate 7778-53-2, Potassium orthophosphate **7784-18-1**, Aluminum

fluoride 7789-23-3, Potassium fluoride 7789-24-4, Lithium fluoride, biological studies 7789-75-5, Calcium fluoride, biological studies 10377-52-3 12125-01-8, Ammonium fluoride 13537-32-1, Monofluorophosphoric acid 13764-79-9, Potassium hexametaphosphate 13845-36-8, Potassium tripolyphosphate 15804-33-8, Lithium tripolyphosphate 37621-20-8 67395-39-5
(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)

IT 64-18-6, Formic acid, reactions 64-19-7, Acetic acid, reactions 144-55-8, Carbonic acid monosodium salt, reactions 463-79-6, Carbonic acid, reactions 1312-76-1, Potassium silicate **6834-92-0** 7631-99-4, Sodium nitrate, reactions 7647-01-0, Hydrochloric acid, reactions 7647-14-5, Sodium chloride (NaCl), reactions **7664-93-9**, **Sulfuric acid**, reactions 7697-37-2, Nitric acid, reactions 7757-82-6, Sodium sulfate, reactions
(toothpaste compn. comprising silica and calcium carbonate based abrasive or additive, compatible with fluorine)

L68 ANSWER 9 OF 14 HCA COPYRIGHT 2003 ACS

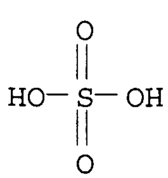
127:38990 Treatment of flue gases and ashes from municipal incinerators to prevent heavy metal leachates in landfills. Nomura, Takuji; Uejima, Kenji (Kanegafuchi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09099215 A2 19970415 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-260490 19951006.

AB Incinerator flue gases contg. HCl and noxious pollutants are neutralized by blowing with slaked lime having sp. **surface area** .gtoreq.30 **m2/g** in a flue duct prior to passing through bag filters. The ashes contg. heavy metals (esp., Pb) from cyclones or elec. precipitators are treated by reacting with .gtoreq.1 stabilizer selected from cement, **water** glass, phosphates, chelating agents, inorg. adsorbents, and neutralizing agents to form insol. compds. for preventing leachates in landfills. The neutralizing agents may include sulfate **salts**, **Al**(OH)3, FeCl3 and H2SO4. The inorg. adsorbents are preferably Al silicate or silica powder having sp. **surface area** .gtoreq.200 **m2/g**.

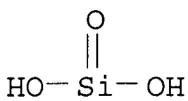
IT **7664-93-9**, **Sulfuric acid**, processes
(neutralizing agent; in treatment of flue gases and ashes from municipal incinerators to prevent heavy metal leachates in landfills)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)

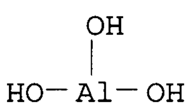


IT 1344-09-8, **Water** glass **14504-95-1**,
Aluminum silicate (Al2(SiO3)3) **21645-51-2**, Aluminum
hydroxide (Al(OH)3), processes
(stabilizer; in treatment of flue gases and ashes from municipal
incinerators to prevent heavy metal leachates in landfills)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 14504-95-1 HCA
CN Silicic acid (H2SiO3), aluminum salt (3:2) (8CI, 9CI) (CA INDEX
NAME)



●2/3 Al

RN 21645-51-2 HCA
CN Aluminum hydroxide (Al(OH)3) (9CI) (CA INDEX NAME)



IC ICM B01D053-68
ICS B01D053-34; B09B003-00
CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 60
IT **7664-93-9**, **Sulfuric acid**, processes
7705-08-0, Ferric chloride, processes
(neutralizing agent; in treatment of flue gases and ashes from
municipal incinerators to prevent heavy metal leachates in
landfills)
IT **1344-09-8**, **Water** glass 7558-79-4, Disodium
hydrogen phosphate **14504-95-1**, Aluminum silicate
(Al2(SiO3)3) 16721-80-5, Sodium hydrogen sulfide
21645-51-2, Aluminum hydroxide (Al(OH)3), processes
(stabilizer; in treatment of flue gases and ashes from municipal
incinerators to prevent heavy metal leachates in landfills)

L68 ANSWER 10 OF 14 HCA COPYRIGHT 2003 ACS
126:119667 Ferrierite-type crystalline zeolites, their manufacture,
especially high-**surface area** hydrogen
ferrierite, and process for isomerizing olefins using the ferrierite
as catalyst. Pasquale, Gary Michael; Murray, Brendan Dermot (Shell
Oil Co., USA; Pq Corporation). PCT Int. Appl. WO 9640587 A1

19961219, 37 pp. DESIGNATED STATES: W: AL, AM, AU, BB, BG, BR, CA, CN, CZ, EE, GE, HU, IS, JP, KG, KP, KR, LK, LR, LS, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, TT, UA, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US9272 19960606. PRIORITY: US 1995-481724 19950607; US 1995-481723 19950607.

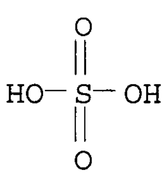
AB The zeolites have compn. (based on the oxides) (1-3)R:(0.5-0.9)M2O:Al2O3:(40-500)SiO2 (R = pyridine; M = alkali metal), and have sp. **surface area** .gtoreq.350 **m2/ g** and consist essentially of ferrierite. The zeolites are manufd. by prepg. a mixt. contg. a source of alkali metal, a source of SiO2, a source of Al2O3, and pyridine in mol. ratio Al2O3:(60-500)Sio2:(10-40)R:(1.5-4M2O):(950-2000)**H2O** such that that there are 0.05-0.15 mol OH-/mol SiO2, and hydrothermally crystg. the ferrierite at 140-180.degree.. The H ferrierite is manufd. by removing at lest part of the pyridine present in th ferrierite, and heating the ferrierite at 500-526.degree., contacting the resulting calcined ferrierite with a source of NH4 ions, and calcining the resulting NH4 ion-exchanged ferrierite- at 200-700.degree.. Linear C>3-olefins are isomerized to the corresponding Me-branched isoolefins at 200-650.degree. using the ferrierite as catalyst.

IT **1344-09-8**, **Sodium silicate**
7664-93-9, **Sulfuric acid**, processes
10043-01-3, Aluminum sulfate
(pyridine-contg. compns. for high-surface ferrierite-type zeolite manuf. by hydrothermal crystn.)

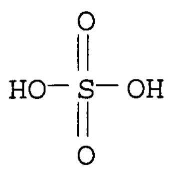
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

IC ICM C01B039-44
ICS B01J029-65; C07C005-27
CC 49-4 (Industrial Inorganic Chemicals)
Section cross-reference(s): 45
IT **1344-09-8**, **Sodium silicate**
7664-93-9, **Sulfuric acid**, processes
7757-82-6, Sodium sulfate, processes **10043-01-3**, Aluminum sulfate
(pyridine-contg. compns. for high-surface ferrierite-type zeolite manuf. by hydrothermal crystn.)

L68 ANSWER 11 OF 14 HCA COPYRIGHT 2003 ACS
124:118101 Synthesis of metal-incorporated mesoporous crystalline silicates for oligomerization of propene. Kim, Jin-bae; Inui, Tomoyuki (Grad. Sch. Eng., Kyoto Univ., Kyoto, 606-01, Japan). Catalysis Letters, 36(3,4), 255-61 (English) 1996. CODEN: CALEER. ISSN: 1011-372X. Publisher: Baltzer.

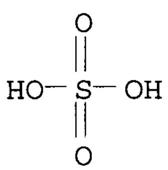
AB Mesoporous cryst. silicates were synthesized from **water** glass and H2SO4 in surfactant soln., with incorporation of various metal components such as Al, Ga, or Fe. Mesoporous silicates synthesized without metal incorporation showed the highest thermal stability. Although the thermal stability was weakened by metal incorporation, Al- and Fe-mesoporous silicates with lower metal content (Si/metal at. ratio of 200) maintained high **surface area**, about 600 **m2/g**, after calcination at 1000.degree. for 0.5 h. Even when the same surfactant (dodecyltrimethylammonium bromide) was used as template for prepn. of the mesoporous silicates, the pore diam. and wall thickness were different, depending on gel mixt. compn. The thermal stability of mesoporous silicates was enhanced by increasing wall thickness. The catalytic activity of Al-mesoporous-silicate increased with the increase of pH of the gel mixt. before crystn. Although the catalytic activity of mesoporous silicate was lower than the activity of other zeolitic catalysts like ZSM-5, a considerable amt. of oligomers was produced from propene even at low temps., and the possibility for manuf. of macromols. was confirmed.

IT **7429-90-5**, Aluminum, uses
(synthesis of metal-contg. mesoporous cryst. silicate catalysts for oligomerization of propene)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

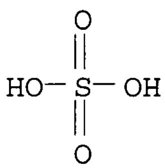
IT **1344-09-8**, **Water** glass **7664-93-9**,
Sulfuric acid, reactions
(synthesis of metal-contg. mesoporous cryst. silicate catalysts for oligomerization of propene)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 67, 78
IT **7429-90-5**, Aluminum, uses 7439-89-6, Iron, uses
7440-55-3, Gallium, uses
(synthesis of metal-contg. mesoporous cryst. silicate catalysts for oligomerization of propene)
IT **1344-09-8**, **Water** glass **7664-93-9**,
Sulfuric acid, reactions
(synthesis of metal-contg. mesoporous cryst. silicate catalysts for oligomerization of propene)

L68 ANSWER 12 OF 14 HCA COPYRIGHT 2003 ACS
115:235738 Manufacture of ZSM-5 zeolite fine particles. Ishida, Hiroshi; Nakagawa, Koji (Asahi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03193622 A2 19910823 Heisei, 20 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-328371 19891220.
AB The ZSM-5 zeolite fine particles, used as adsorbent and catalyst, are manufd. by crystn. of raw material mixt. contg. silica-, alumina-, alkali metal-source and **water** (mol ratio of SiO2/Al2O3 = 25-40) under hydrothermal synthesis conditions as follows: (1) sep. prep. a seed slurry (dried solid matter of the seed slurry has X-ray diffraction pattern of ZSM-5 zeolite and N2 adsorption **BET surface area** 100-250 **m2/g**), and (2) adding the seed slurry 10-40 wt.% (vs. whole reaction system) to a crystg. hydrothermal synthesis slurry prior to crystn. Addnl., org. substance, such as lower alkyl urea, can be contained in the raw material mixt. Exemplified raw material mixt. contains **water** glass, NaOH, **water**, Al2(SO4)3, 1,3-di-Me urea, and H2SO4.

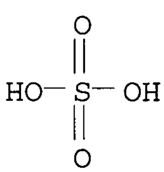
IT **1344-09-8, Water** glass **7664-93-9,**
Sulfuric acid, uses and miscellaneous
7732-18-5, Water, uses and miscellaneous
10043-01-3, Aluminum sulfate
(raw material mixt. contg., in manuf. of ZSM5 zeolite, by hydrothermal synthesis)
RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



RN 7732-18-5 HCA
CN Water (8CI, 9CI) (CA INDEX NAME)

H_2O

RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



2/3 Al

IC ICM C01B033-34
ICS B01J020-18; B01J029-28
CC 49-4 (Industrial Inorganic Chemicals)
IT 96-31-1, 1,3-Dimethyl urea 1310-73-2, Sodium hydroxide, uses and miscellaneous **1344-09-8, Water** glass
7664-93-9, Sulfuric acid, uses and
miscellaneous **7732-18-5, Water**, uses and
miscellaneous **10043-01-3**, Aluminum sulfate
(raw material mixt. contg., in manuf. of ZSM5 zeolite, by hydrothermal synthesis)

L68 ANSWER 13 OF 14 HCA COPYRIGHT 2003 ACS

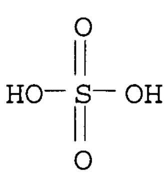
103:217665 Silica gels. Voigtberger, Klaus; Herzog, Guenther; Pfeil, Gisela (VEB Chemiewerk Bad Koestritz, Ger. Dem. Rep.). Ger. (East) DD 223139 A1 19850605, 7 pp. (German). CODEN: GEXXA8. APPLICATION: DD 1983-258261 19831221.

AB Shaped or unshaped SiO_2 gels with variable pore structures are prepd. by conversion of alkali metal silicates with free or $Al_2(SO_4)_3$-contg. H_2SO_4 by combining the silicates with .ltoreq.20% SiO_2 in the form of waste liquors contg. 3-10% SiO_2, e.g. SiO_2 mother liquors from mol. sieve manuf. The SiO_2 available in this form does not have a neg. effect on the gel structure. Thus, a homogenized mixt. of 31.2 **Na silicate** conc., 28.5 **water**, and 20.3 kg mother liquor contg. 10% SiO_2 was converted to a spherical gel by known methods by treating with 30.5 kg of an acid soln. comprising H_2SO_4 3.9, **water** 25.3, and $Al_2(SO_4)_3$ 1.3 kg. In these amts., 20% of the SiO_2 in the **Na silicate** is replaced by the SiO_2 in the mother liquor. The resulting hydrogel is **watered** and dried and gives spherical gel with 94% SiO_2 yield and sp. **surface area** of 710 **m^2/g**.

IT **7664-93-9**, uses and miscellaneous
(in silica gel manuf., from **sodium silicate** and silica-contg. waste liquors)

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **1344-09-8**
(in silica gel manuf., with silica from mol. sieve manufg. liquors)

RN 1344-09-8 HCA

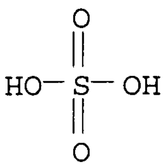
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **10043-01-3**
(**sulfuric acid** contg., in silica gel manuf.)

RN 10043-01-3 HCA

CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



●2/3 Al

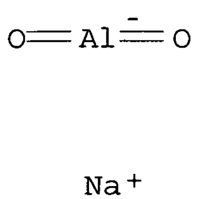
IC ICM C01B033-143
CC 49-3 (Industrial Inorganic Chemicals)
IT Molecular sieves
(manuf. of, silica-contg. liquors from, silica gel manuf. from **sodium silicate** and)
IT **7664-93-9**, uses and miscellaneous
(in silica gel manuf., from **sodium silicate** and silica-contg. waste liquors)
IT **1344-09-8**
(in silica gel manuf., with silica from mol. sieve manufg. liquors)
IT **10043-01-3**
(**sulfuric acid** contg., in silica gel manuf.)

L68 ANSWER 14 OF 14 HCA COPYRIGHT 2003 ACS
101:44120 Zeolite. Rosinski, Edward Joseph; Rubin, Mae Koenig (Mobil Oil Corp. , USA). Eur. Pat. Appl. EP 107370 A1 19840502, 21 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1983-305747 19830926. PRIORITY: US 1982-425019 19820927; US 1982-425018 19820927.
AB A zeolite adsorbent and catalyst for cracking and prepg. org. compds. by hydrocarbon conversion reactions is designated as ZSM-45 with M2/nO:Al2O3:>8 mol SiO2 and formula of (0.8-1.8) R2O.(0.0-0.3)Na2O. (0.0-0.5) K2O.Al2O3.xSiO2 (R = a 2-(hydroxyalkyl)triallylammonium compd. where the alkyl is Et or Me and x > 8). Thus, choline chloride was added to a KOH- **Na silicate** soln. and mixed with an acidic Al2(SO4)3 soln. and the mixt. allowed to crystallize at 99.degree. over 197 days. This zeolite had a **surface area** of 514 **m2/ g.**
IT **7732-18-5**, vapor
(adsorption of, by zeolite)
RN 7732-18-5 HCA
CN Water (8CI, 9CI) (CA INDEX NAME)

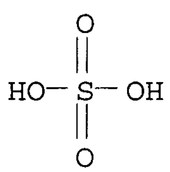
H_2O

IT **1344-28-1**, uses and miscellaneous

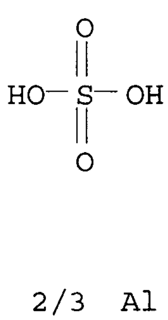
(in zeolite adsorbent and catalyst prepn.)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1302-42-7 1344-09-8 7664-93-9**, uses and
miscellaneous **10043-01-3**
(in zeolite prepn.)
RN 1302-42-7 HCA
CN Aluminate (AlO21-), sodium (9CI) (CA INDEX NAME)



RN 1344-09-8 HCA
CN Silicic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



RN 10043-01-3 HCA
CN Sulfuric acid, aluminum salt (3:2) (8CI, 9CI) (CA INDEX NAME)



IC C01B033-28
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction
Mechanisms)
Section cross-reference(s): 23, 24, 25, 51, 66
IT 110-54-3, properties 110-82-7, properties **7732-18-5**,
vapor

(adsorption of, by zeolite)
IT **1344-28-1**, uses and miscellaneous
(in zeolite adsorbent and catalyst prepn.)
IT 62-49-7 67-48-1 **1302-42-7** 1310-58-3, uses and miscellaneous 1333-74-0, uses and miscellaneous **1344-09-8** **7664-93-9**, uses and miscellaneous **10043-01-3** 12125-02-9, uses and miscellaneous
(in zeolite prepn.)